

June 9, 2016

Betsy Nightingale On-Scene Coordinator U.S. Environmental Protection Agency Region 5 9311 Groh Road Gross Ile, Michigan 48138-1692

Subject: Data Validation Report

Grand Rapids Vapor Intrusion Emergency Response

EPA Contract No. EP-S5-13-01

Technical Direction Document No. S05-0001-1605-010

Document Tracking No. 0794

Dear Ms. Nightingale:

Tetra Tech Inc. (Tetra Tech) is submitting this Data Validation Report for two air samples collected at the Grand Rapids Vapor Intrusion Emergency Response site. The samples were collected on May 21, 2016 and were analyzed for volatile organic compounds (VOC) by the Bureau Veritas Laboratory in Novi, Michigan. The laboratory data package was received on May 31, 2016.

Analytical data were evaluated in general accordance with the EPA Contract Laboratory Program (CLP) National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (August 2014).

All results may be used as reported.

Hang N. Ellis III

If you have any questions regarding this data validation report, please call me at (312) 201-7756

Sincerely,

Harry Ellis

START Chemist

Enclosure

cc: Kevin Scott, Tetra Tech Program Manager

Michael Browning, Seagull Envirotech Project Manager

TDD File

ATTACHMENT 1

DATA VALIDATION REPORT AIR SAMPLES COLLECTED MAY 21, 2016

Site Name	Grand Rapids Vapor Intrusion ER	TDD No.	S05-0001-1605-010	
Document Tracking No.	0794	IDD NO.	303-0001-1003-010	
Data Reviewer	Hang N. Elis III 1 June 2016	Technical Reviewer	000012	
(signature and date)	1 June 2016	(signature and date)	Debrie Kuhl June 9, 2016	
Laboratory Report No.	16051298	Laboratory	Bureau Veritas/Novi, Michigan	
Analyses Volatile organic compounds (VOC) by EPA		Method TO-15		
Samples and Matrix	Two air samples			
Field Duplicate Pairs None				
Field Blanks	None			

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *Contract Laboratory Program (CLP) National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

All results may be used as reported.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrument Performance Checks:

Within Criteria	Exceedance/Notes
Υ	

Initial Calibration:

Within Criteria	Exceedance/Notes
Υ	

Continuing Calibration:

Within Criteria	Exceedance/Notes
Υ	

Calibration Verification:

	• • • • • • • • • • • • • • • • • • • •
Within	Evenedance/Notes
Criteria	Exceedance/Notes
Υ	

Method blanks:

Within Criteria	Exceedance/Notes
Υ	

Field blanks:

Within Criteria	Exceedance/Notes
NA	



Interference Check Sam	ples (ICS)	(ICP	metals	only)
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Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

With Crite	Exceedance/Notes	
NA		

Post digestion spikes:

Within	Exceedance/Notes
Criteria	Exceedance/ Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
Υ	



Field duplica	ates:
Within Criteria	Exceedance/Notes
NA	
LCSs/LCSDs:	
Within Criteria	Exceedance/Notes
Υ	
Sample dilu	tions:
Within Criteria	Exceedance/Notes
NA	
Re-extraction	on and reanalysis:
Within Criteria	Exceedance/Notes
NA	
Second colu	mn confirmation (GC and HPLC analyses only):
Within Criteria	Exceedance/Notes
NA	
Internal Sta	ndards:
Within Criteria	Exceedance/Notes



	Target	analy	∕te	ident	tifica	tion:
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Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	

Tentatively identified compounds:

. Ciitativei	y lacitanea compounas.
Within	Even adams of Nickes
Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

_	Other laber	
	Within	Evenedones /Notes
	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.





Client: TETRA TECH

Project: Work Order No: 16051298

Sample Identification GRPCE-01-IA- 1) Date Sampled: 5/21/2016

Lab Number: 001A Date Received: 5/22/2016

Sample Type: Air, Can Analysis Date: 5/22/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -5.2 psig
Final Pressure: -0.6 psig

Canister ID: N0033

CAS#	Analyte	7 P. 10 P. 1	RL g/m³)	Results (ppbV)	RL (ppbV)	DF	Qual
71-55-6	1,1,1-Trichloroethane	ND U	4.1	ND	0.75	1.5	
79-34-5	1,1,2,2-Tetrachloroethane	ND (5.1	ND	0.75	1.5	
79-00-5	1,1,2-Trichloroethane	ND	4.1	ND	0.75	1.5	
75-34-3	1,1-Dichloroethane	ND	3.0	ND	0.75	1.5	
75-35-4	1,1-Dichloroethene	ND	3.0	ND	0.75	1.5	
120-82-1	1,2,4-Trichlorobenzene	ND	5.6	ND	0.75	1.5	
95-63-6	1,2,4-Trimethylbenzene	ND	3.7	ND	0.75	1.5	
106-93-4	1,2-Dibromoethane	ND	5.8	ND	0.75	1.5	
95-50-1	1,2-Dichlorobenzene	ND	4.5	ND	0.75	1.5	
107-06-2	1,2-Dichloroethane	ND	3.0	ND	0.75	1.5	
78-87-5	1,2-Dichloropropane	ND	3.5	ND	0.75	1.5	
108-67-8	1,3,5-Trimethylbenzene	ND	3.7	ND	0.75	1.5	
106-99-0	1,3-Butadiene	ND	1.7	ND	0.75	1.5	
541-73-1	1,3-Dichlorobenzene	ND	4.5	ND	0.75	1.5	
106-46-7	I,4-Dichlorobenzene	ND	4.5	ND	0.75	1.5	
123-91-1	1,4-Dioxane	ND V	11	ND	3	1.5	
540-84-1	2,2,4-Trimethylpentane	ND	35	ND	0.75	1.5	
78-93-3	2-Butanone	5.6	2.2	1.9	0.75	1.5	
591-78-6	2-Hexanone	ND 🗸	3.1	ND	0.75	1.5	
622-96-8	4-Ethyltoluene	ND U	3.7	ND	0.75	1.5	
108-10-1	4-Methyl-2-pentanone	ND U	3.1	ND	0.75	1.5	
67-64-1	Acetone	61	3.6	26	1.5	1.5	
107-05-1	Allyl Chloride	ND C	2.3	ND	0.75	1.5	
71-43-2	Benzene	ND /	2.4	ND	0.75	1.5	
100-44-7	Benzyl Chloride	ND	3.9	ND	0.75	1.5	
75-27-4	Bromodichloromethane	ND	5.0	ND	0.75	1.5	
593-60-2	Bromoethene	ND	3.3	ND	0.75	1.5	
75-25-2	Bromoform	ND (A	7.8	ND	0.75	1,5	

General Notes and Qualifiers:

-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

1 June 2 p14

B; Analyte detected in the associated Method Blank

Date: 23-May-16

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Client: TETRA TECH

Project: Work Order No: 16051298

Sample Identification GRPCE-01-IA- 1) Date Sampled: 5/21/2016

Dampie delianento. Gra Go VI II

Lab Number: 001A Date Received: 5/22/2016
Sample Type: Air, Can Analysis Date: 5/22/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -5.2 psig
Final Pressure: -0.6 psig

Canister ID: N0033

CAS#		Analyte	Results (ug/m³) (RL ug/m³)	Results (ppbV)	RL (ppbV)	DF	Qual
74-83-9	Bromomethane		ND M	2.9	ND	0.75	1.5	
75-15-0	Carbon Disulfide		ND	2.3	ND	0.75	1.5	
56-23-5	Carbon Tetrachloride		ND	4.7	ND	0.75	1.5	
108-90-7	Chlorobenzene		ND	3.5	ND	0.75	1.5	
75-00-3	Chloroethane		ND U	2.0	ND	0.75	1.5	
67-66-3	Chloroform		6,4	3.7	1.3	0.75	1.5	
74-87-3	Chloromethane		1.8	1.5	0.87	0.75	1.5	
156-59-2	cis-1,2-Dichloroethene		ND Y	3.0	ND	0.75	1.5	
10061-01-5	cis-1,3-Dichloropropene		ND	3.4	ND	0.75	1.5	
110-82-7	Cyclohexane		ND	2.6	ND	0.75	1.5	
124-48-1	Dibromochloromethane		ND	6.4	ND	0.75	1.5	
75-71-8	Dichlorodifluoromethane		ND	3.7	ND	0.75	1.5	
76-14-2	Dichlorotetrafluoroethane		ND	5.2	ND	0.75	1.5	
141-78-6	Ethyl Acetate		ND	2.7	ND	0.75	1.5	
100-41-4	Ethylbenzene		ND	3.3	ND	0.75	1.5	
142-82-5	Heptane		ND	3.1	ND	0.75	1.5	
87-68-3	Hexachlorobutadiene		ND	8.0	ND	0.75	1.5	
110-54-3	Hexane		ND V	2.6	ND	0.75	1.5	
67-63-0	Isopropyl Alcohol		800	37	330	15	15	
108-38-3	m & p-Xylene		ND 4	3.3	ND	0.75	1.5	
1634-04-4	Methyl tert-Butyl Ether		ND	2.7	ND	0.75	1.5	
75-09-2	Methylene Chloride		ND	2.6	ND	0.75	1.5	
91-20-3	Naphthalene		ND	3.9	ND	0.75	1.5	
95-47-6	o-Xylene		ND	3.3	ND	0.75	1.5	
115-07-1	Propene		ND	1.3	ND	0.75	1.5	
100-42-5	Styrene		ND	132	ND	0.75	1.5	
127-18-4	Tetrachloroethene		35	5.1	5.1	0.75	1.5	
109-99-9	Tetrahydrofuran		ND 1	2.2	ND	(.75)	1.5	

General Notes and Qualifiers:

-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

Date: 23-May-16

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve

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Date: 23-May-16

Client: TETRA TECH

Project: Work Order No: 16051298

Sample Identification GRPCE-01-IA- 1) Date Sampled: 5/21/2016

Lab Number: 001A Date Received: 5/22/2016

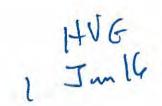
Sample Type: Air, Can Analysis Date: 5/22/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -5.2 psig
Final Pressure: -0.6 psig

Canister ID: N0033

CAS#	A	Analyte	Results (ug/m³)	RL (ug/m³)	Results (ppbV)	RL (ppbV)	DF	Qual
108-88-3	Toluene		8.5	2.8	, 2.3	0.75	1.5	
156-60-5	trans-1,2-Dichloroethene		ND	V 3.0	ND	0.75	1.5	
10061-02-6	trans-1,3-Dichloropropene		ND	3.4	ND	0.75	1.5	
79-01-6	Trichloroethene		ND	4.0	ND	0.75	1.5	
75-69-4	Trichlorofluoromethane		ND	4.2	ND	0.75	1.5	
76-13-1	Trichlorotri fluoroethane		ND	5.7	ND	0.75	1.5	
108-05-4	Vinyl Acetate		ND	2.6	ND	0.75	1.5	
75-01-4	Vinyl Chloride		ND	4 1.9	ND	0.75	1.5	



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S, Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Client: TETRA TECH

Project: Work Order No: 16051298

Sample Identification GRPCE-02-IA 2) Date Sampled: 5/21/2016

Lab Number: 002A Date Received: 5/22/2016

Sample Type: Air, Can Analysis Date: 5/22/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -3.69 psig
Final Pressure: -3.69 psig

Canister ID: 33954

CAS#	Analyte	Results RL (ug/m³) (ug/m³)	Results (ppbV)	RL (ppbV)	DF	Qual
71-55-6	1,1,1-Trichloroethane	ND U 2.7	ND ND	0.5	1	
79-34-5	1,1,2,2-Tetrachloroethane	ND 3.4	ND	0.5	1	
79-00-5	1,1,2-Trichloroethane	ND 2.7	ND	0.5	1	
75-34-3	1,1-Dichloroethane	ND 2.0	ND	0.5	1	
75-35-4	1,1-Dichloroethene	ND 2.0	ND	0.5	1	
120-82-1	1,2,4-Trichlorobenzene	ND 3.7	ND	0.5	1	
95-63-6	1,2,4-Trimethylbenzene	ND 2.5	ND	0.5	1	
106-93-4	1,2-Dibromoethane	ND 3.8	ND	0.5	1	
95-50-1	1,2-Dichlorobenzene	ND 3.0	ND	0.5	1	
107-06-2	1,2-Dichloroethane	ND 2.0	ND	0.5	1	
78-87-5	1,2-Dichloropropane	ND 2.3	ND	0.5	1	
108-67-8	1,3,5-Trimethylbenzene	ND 2.5	ND	0.5	1	
106-99-0	1,3-Butadiene	ND 1.1	ND	0.5	1	
541-73-1	1,3-Dichlorobenzene	ND 3.0	ND	0.5	1	
106-46-7	1,4-Dichiorobenzene	ND 3.0	ND	0.5	1	
123-91-1	1,4-Dioxane	ND 1 7.2	ND	2	1	
540-84-1	2,2,4-Trimethylpentane	ND U 23	ND	0.5	1	
78-93-3	2-Butanone	4.8 1.5	1.6	0.5	1	
591-78-6	2-Hexanone	ND4 (2.0	ND	0.5	1	
622-96-8	4-Ethyltoluene	ND W 2.5	ND	0.5	1	
108-10-1	4-Methyl-2-pentanone	ND 4 2.0	ND	0.5	1	
67-64-1	Acetone	53 2.4	22	1	1	
107-05-1	Allyl Chloride	ND4 (1.6	ND	0.5	1	
71-43-2	Benzene	ND \ 1.6	ND	0.5	1	
100-44-7	Benzyl Chloride	ND 2.6	ND	0.5	1	
75-27-4	Bromodichloromethane	ND 3.4	ND	0.5	1	
593-60-2	Bromoethene	ND 2.2	ND	0.5	1	
75-25-2	Bromoform	ND 0 5.2	ND	0.5	1	

General Notes and Qualifiers:

-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

Date: 23-May-16

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve

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Date: 23-May-16

Date Received: 5/22/2016

TETRA TECH Client:

Project: Work Order No: 16051298

Sample Identification GRPCE-02-IA (2) Date Sampled: 5/21/2016

002A

Sample Type: Air, Can Analysis Date: 5/22/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -3.69 psig Final Pressure: -3.69 psig

33954 Canister ID:

Lab Number:

CAS#	A	Analyte	Results (ug/m³)	RL (ug/m³)	Results (ppbV)	RL (ppbV)	DF	Qual
74-83-9	Bromomethane		ND	C 1.9	ND	0.5	1	
75-15-0	Carbon Disulfide		3.6	1.6	1.2	0.5	1	
56-23-5	Carbon Tetrachloride		ND	U [3.1]	ND	0.5	1	
108-90-7	Chlorobenzene		ND	4 2.3	ND	0.5	1	
75-00-3	Chloroethane		ND	4 1.3	ND	0.5	1	
67-66-3	Chloroform		3.8	2.4	0.77	0.5	1	
74-87-3	Chloromethane		1.8	1.0	0.89	0.5	1	
156-59-2	cis-1,2-Dichloroethene		ND	2.0	ND	0.5	1	
10061-01-5	cis-1,3-Dichloropropene		ND	2.3	ND	0.5	1	
110-82-7	Cyclohexane		ND	1.7	ND	0.5	1	
124-48-1	Dibromochloromethane		ND	4.3	ND	0.5	1	
75-71-8	Dichlorodifluoromethane		ND	2.5	ND	0.5	1	
76-14-2	Dichlorotetrafluoroethane		ND	1 35	ND	0.5	1	
141-78-6	Ethyl Acetate		2.3	1.8	0.65	0.5	1	
100-41-4	Ethylbenzene		ND	1 2.2	ND	0.5	1	
142-82-5	Heptane		ND	2.0	ND	0.5	1	
87-68-3	Hexachlorobutadiene		ND	5.3	ND	0.5	1	
110-54-3	Hexane		ND	1 18	ND	0.5	1	
67-63-0	Isopropyl Alcohol		47	2.5	19	1	1	
108-38-3	m & p-Xylene		ND	1 2.2	ND	0.5	1	
1634-04-4	Methyl tert-Butyl Ether		ND	1 18	ND	0.5	1	
75-09-2	Methylene Chloride		4.3	1.7	1.3	0.5	1	
91-20-3	Naphthalene		ND	4 [2.6]	ND	(0.5	1	
95-47-6	o-Xylene		ND	2.2	ND	0.5	1	
115-07-1	Propene		ND.	0.86	ND	0.5	1	
100-42-5	Styrene		ND	2.1	ND	0,5	1	
127-18-4	Tetrachloroethene		67	3.4	9.9	0.5	1	
109-99-9	Tetrahydrofuran		ND	U (1.5)	ND	05	1.	

General Notes and Qualifiers:

-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Client: TETRA TECH

Project: Work Order No: 16051298

Sample Identification GRPCE-02-IA-1 (2) Date Sampled: 5/21/2016

Lab Number: 002A Date Received: 5/22/2016

Sample Type: Air, Can Analysis Date: 5/22/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -3.69 psig
Final Pressure: -3.69 psig

Canister ID: 33954

CAS#		Analyte		Resu (ug/			(L /m³)	Results (ppbV)	RL (ppbV)	DF	Qual
108-88-3	Toluene			4.	1		1.9	1.1	0.5	1	
156-60-5	trans-1,2-Dichloroethene				ND	Y	2.0	ND	0.5	1	
10061-02-6	trans-1,3-Dichloropropene				ND		2.3	ND	0.5	I	
79-01-6	Trichloroethene				ND		2.7	ND	0.5	1	
75-69-4	Trichlorofluoromethane				ND		2.8	ND	0.5	- 1	
76-13-1	Trichlorotrifluoroethane				ND	J	3.8	ND	0.5	1	
108-05-4	Vinyl Acetate				ND		1.8	ND	0.5	1	
75-01-4	Vinyl Chloride		HUE		ND	u	1.3	ND	0.5	1	
			HOE 1 Jun	16							

General Notes and Qualifiers:

-; Information not available or not applicable.

ND, Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

Date: 23-May-16

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



June 16, 2016

Betsy Nightingale On-Scene Coordinator U.S. Environmental Protection Agency Region 5 9311 Groh Road Grosse Ile, MI 48138-1697

Subject: Data Validation Reports

Grand Rapids VI ER

EPA Contract No. EP-S5-13-01

Technical Direction Document No. S05-0001-1605-010

Document Tracking No. 0858

Dear Ms. Nightingale:

Tetra Tech Inc. (Tetra Tech) is submitting these Data Validation Reports for 45 air samples (including three field duplicates) collected at the Grand Rapids VI ER site. The samples were collected from May 26 through June 6, 2016 and were analyzed for volatile organic compounds by Bureau Veritas Laboratories. Tetra Tech received the last of the data on June 14, 2016.

Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines* (NFG) for Superfund Organic Methods Data Review (August 2014).

No rejection of results was required for this data set, although some results were qualified as estimated. The data is usable as qualified.

If you have any questions regarding these Data Validation Reports, please call me at (662) 681-5727.

Sincerely,

Jessica A. Vickers START Chemist

Enclosure

cc: Kevin Scott, Tetra Tech Program Manager

Michael Browning, Tetra Tech Project Manager

TDD File

Jesaca a Vickers

ATTACHMENT 1

DATA VALIDATION REPORTS SDGS 16051545, 16051635, 16060144, 16060309, AND 16060334

Site Name	Grand Rapids VI ER		TDD No.	S05-0001-1605-010
Document Tracking No.	0858A		וטט ואס.	303-0001-1603-010
Data Reviewer (signature and date)	Jesaca a. Vickers June 14, 2016		Technical Reviewer (signature and date)	Hang N. Elis III 15 June 2016
Laboratory Report No.	16051545		Laboratory	Bureau Veritas/Novi, MI
Analyses	Volatile organic compounds (VOCs) by EPA	Ме	thod TO-15	
Samples and Matrix	Seven air samples			
Field Duplicate Pairs	None			
Field Blanks	None			

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection of results was required for this data set. The data is usable as qualified.

Data completeness:

Within Criteria	Exceedance/Notes
Y	The laboratory erroneously named the indoor air samples with "1A" instead of "IA" and the outdoor air sample with "0A" instead of "OA" in the sample identifiers. The sample names were manually corrected in the attachment.

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrument Performance Checks:

Within Criteria	Exceedance/Notes
Υ	

Initial Calibration:

Within Criteria	Exceedance/Notes
N	The relative standard deviation for 1,2,4-trichlorobenzene exceeded the acceptance criteria. The associated results were qualified as estimated (J/UJ).

Continuing Calibration:

Within Criteria	Exceedance/Notes
N	The percent difference for 1,1-dichloroethane exceeded the acceptance criteria. The associated non-detect results were qualified as estimated (UJ).

Calibration Verification:

Within Criteria	Exceedance/Notes
NA	

Method blanks:

Within Criteria	Exceedance/Notes
Υ	



	EIN REGIONS START CONTRACT
Field blank	cs:
Within Criteria	Exceedance/Notes
NA	
Interferen	ce Check Samples (ICS) (ICP metals only):
Within Criteria	Exceedance/Notes
NA	
	onitoring compounds (surrogates and labeled compounds):
Within Criteria	Exceedance/Notes
Υ	
MS/MSD:	
Within Criteria	Exceedance/Notes
NA	
	tion spikes:
Within	Exceedance/Notes
Criteria	
NA	
Serial dilut	tions:
Within Criteria	Exceedance/Notes



NA

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	

Field duplicates:

Within Criteria	Exceedance/Notes
NA	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Υ	

Sample dilutions:

Within Criteria	Exceedance/Notes
	Sample GRPCE-01-IA- (MAIN) required a 25-fold dilution for acetone and isopropyl alcohol to attempt to bring the results within the calibration range. The isopropyl alcohol result was still above the calibration range and was therefore qualified as estimated (J).
N	Samples GRPCE-01-IA- (BASEMENT), GRPCE-01-IA- (BASEMENT), and GRPCE-01-IA- (MAIN) required 25-fold dilutions for 1,4-dichlorobenzene, acetone, and isopropyl alcohol to attempt to bring the results within the calibration range. The isopropyl alcohol results were still above the calibration range and were therefore qualified as estimated (J).
	Sample GRPCE-01-IA- (BASEMENT) required a 25-fold dilution for acetone to bring the result within the calibration range.

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
Υ	

Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	Note: There is no indication that results below the reporting limits, but above method detection limits, were reported.

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	



Other [specify]:

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.





Client: TETRA TECH

Project: Work Order No: 16051545

Sample Identification GRPCE-01-5A-1 Date Sampled: 5/25/2016

Lab Number: 001A Date Received: 5/26/2016

Sample Type: Air, Can Analysis Date: 5/26/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -1.3 psig
Final Pressure: -1.3 psig

Canister ID: 14110

CAS#	Analyte	Results (ug/m³)	RL (ug/m³)	Results (ppbV)	RL (ppbV)	DF	Qual
71-55-6	1,1,1-Trichloroethane	ND	27	ND	(05)	1	V
79-34-5	1,1,2,2-Tetrachloroethane	ND	34	ND	0.5	1	
79-00-5	1,1,2-Trichloroethane	ND	2.7	ND	0.5	1	1
75-34-3	1,1-Dichloroethane	ND	2.0	ND	0.5	1	UJ
75-35-4	1,1-Dichloroethene	ND	2.0	ND	0.5	1	U
120-82-1	1,2,4-Trichlorobenzene	ND	3.7	ND	0.5	1	UJ
95-63-6	1,2,4-Trimethylbenzene	ND	2.5	ND	0.5	1	U
106-93-4	1,2-Dibromoethane	ND	3.8	ND	0.5	1	
95-50-1	1,2-Dichlorobenzene	ND	3.0	ND	0.5	1	
107-06-2	1,2-Dichloroethane	ND	2.0	ND	0.5	1	
78-87-5	1,2-Dichloropropane	ND	2.3	ND	0.5	1	
108-67-8	1,3,5-Trimethylbenzene	ND	2.5	ND	0.5	1	
106-99-0	1,3-Butadiene	ND	11	ND	0.5	1	
541-73-1	1,3-Dichlorobenzene	ND	3.0	ND	0.5	1	
106-46-7	1,4-Dichlorobenzene	ND	3.0	ND	0.5	1	
123-91-1	1,4-Dioxane	ND	7.2	ND	2	1	
540-84-1	2,2,4-Trimethylpentane	ND	23	ND	05	1	V
78-93-3	2-Butanone	2.3	1.5	0.78	0.5	1	
591-78-6	2-Hexanone	ND	62.0	ND	0.5	1	U
622-96-8	4-Ethyltoluene	ND	2.5	ND	0.5	1	
108-10-1	4-Methyl-2-pentanone	ND	2.0	ND	0.5	1	V
67-64-1	Acetone	(21)	2.4	(9.0)	I	1	
107-05-1	Allyl Chloride	ND	1.6	ND	0.5	1	U
71-43-2	Benzene	ND	1.6	ND	0.5	1	
100-44-7	Benzyl Chloride	ND	2.6	ND	0.5	1	
75-27-4	Bromodichloromethane	ND	3.4	ND	0.5	1	
593-60-2	Bromoethene	ND	2.2	ND	0.5	1	
75-25-2	Bromoform	ND	5.2	ND	0.5	1	V

General Notes and Qualifiers:

-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

- B; Analyte detected in the associated Method Blank
- S; Spike Recovery outside accepted recovery limits
- R; RPD outside accepted recovery limits
- T; Tentatively Identified Compound (TIC)
- E; Value exceeds linear range of calibration curve



Date: 27-May-16



Client: TETRA TECH

Project: Work Order No: 16051545

Sample Identification GRPCE-01-80

Lab Number: 001A

Sample Type: Air, Can

Test Method: EPA Method TO-15A

Initial Pressure: -1.3 psig
Final Pressure: -1.3 psig
Canister ID: 14110

CAS#		Analyte	Results (ug/m³)	RL (ug/m³)	Results (ppbV)	RL (ppbV)	DF	Qual
74-83-9	Bromomethane		ND	1.9	ND	(0.5)	1	U
75-15-0	Carbon Disulfide		(2.6)	1.6	(0.85)	0.5	1	
56-23-5	Carbon Tetrachloride		ND	3.1	ND	0.5	1	U
108-90-7	Chlorobenzene		ND	2.3	ND	0.5	1	
75-00-3	Chloroethane		ND	1.3	ND	0.5	1	
67-66-3	Chloroform		ND	2.4	ND	0.5	1	J
74-87-3	Chloromethane		1.5	10	0.75	0.5	1	
156-59-2	cis-1,2-Dichloroethene		ND	2.0	ND	(0.5)	1	Y
10061-01-5	cis-1,3-Dichloropropene		ND	2.3	ND	0.5	1	
110-82-7	Cyclohexane		ND	1.7	ND	0.5	1	
124-48-1	Dibromochloromethane		ND	4.3	ND	0.5	1	
75-71-8	Dichlorodifluoromethane		ND	2.5	ND	0.5	1	
76-14-2	Dichlorotetrafluoroethane		ND	3.5	ND	0.5	1	1
141-78-6	Ethyl Acetate		ND	1.8	ND	0.5	1	
100-41-4	Ethylbenzene		ND	2.2	ND	0.5	1	
142-82-5	Heptane		ND	2.0	ND	0.5	1	
87-68-3	Hexachlorobutadiene		ND	5.3	ND	0.5	1	1.
110-54-3	Hexane		ND	1.8	ND	05	1	V
67-63-0	Isopropyl Alcohol		(8.9)	2.5	(3.6)	I	1	
108-38-3	m & p-Xylene		ND	2.2	ND	(0.5)	1	U
1634-04-4	Methyl tert-Butyl Ether		ND	1.8	ND	(0.5)	1	U
75-09-2	Methylene Chloride		(2.8)	1.7	0.82	0.5	1	
91-20-3	Naphthalene		ND	26	ND	(0.5)	1	U
95-47-6	o-Xylene		ND	2.2	ND	0.5	1	
115-07-1	Propene		ND	0.86	ND	0.5	1	
100-42-5	Styrene		ND	2.1	ND	0.5	1	
127-18-4	Tetrachloroethene		ND	3.4	ND	0.5	1	1
109-99-9	Tetrahydrofuran		(1.9)	1.5	0.65	0.5	1	

General Notes and Qualifiers:

-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

Date: 27-May-16

Date Sampled: 5/25/2016

Date Received: 5/26/2016

Analysis Date: 5/26/2016

Analyst: DRS

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 27-May-16

Client:

TETRA TECH

Project:

Work Order No: 16051545

Sample Identification GRPCR-01-9/A

001A

Date Sampled: 5/25/2016

Lab Number:

Date Received: 5/26/2016

Sample Type:

Air, Can

Analysis Date: 5/26/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-1.3 psig

Final Pressure:

-1.3 psig

Canister ID:

14110

CAS#	Analyte	Results (ug/m³)	RL (ug/m³)	Results (ppbV)	RL (pphV)	DF	Qual
108-88-3	Toluene	(2.2)	1.9	(0.59)	0.5	1	
156-60-5	trans-1,2-Dichloroethene	ND	2.0	ND	0.5	1	U
10061-02-6	trans-1,3-Dichloropropene	ND	2.3	ND	0.5	1	1
79-01-6	Trichloroethene	ND	2.7	ND	0.5	1	
75-69-4	Trichlorofluoromethane	ND	2.8	ND	0.5	1	
76-13-1	Trichlorotrifluoroethane	ND	3.8	ND	0.5	1	
108-05-4	Vinyl Acctate	ND	1.8	ND	0.5	1	1.
75-01-4	Vinyl Chloride	ND	1.3	ND	0.5	1	V



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 27-May-16

Client: TETRA TECH

Project: Work Order No: 16051545

Sample Identification GRPCE-01-/A- (BASEMENT) Date Sampled: 5/25/2016

Lab Number; 005A Date Received: 5/26/2016

Sample Type: Air, Can Analysis Date: 5/27/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -2.3 psig
Final Pressure: -2.3 psig

14593

Canister ID:

CAS#	Analyte	Results (ug/m²)	RL (ug/m³)	Results (ppbV)	RL (ppbV)	DF	Qual
71-55-6	1,1,1-Trichloroethane	ND	(27)	ND	(0.5)	1	Ų
79-34-5	1,1,2,2-Tetrachloroethane	ND	34	ND	0.5	1	
79-00-5	1,1,2-Trichloroethane	ND	2.7	ND	0.5	1	V
75-34-3	1,1-Dichloroethane	ND	2.0	ND	0.5	1	UJ
75-35-4	1,1-Dichloroethene	ND	2.0	ND	0.5	1	U
120-82-1	1,2,4-Trichlorobenzene	ND	3.7	ND	0.5	1	UJ
95-63-6	1,2,4-Trimethylbenzene	ND	2.5	ND	0.5	1	V
106-93-4	1,2-Dibromoethane	ND	3.8	ND	0.5	1	
95-50-1	1,2-Dichlorobenzene	ND	3.0	ND	0.5	1	
107-06-2	1,2-Dichloroethane	ND	2.0	ND	0.5	1	
78-87-5	1,2-Dichloropropane	ND	2.3	ND	0.5	1	
108-67-8	1.3,5-Trimethylbenzene	ND	2.5	ND	0.5	1	
106-99-0	1,3-Butadiene	ND	11	ND	0.5	1	
541-73-1	1,3-Dichlorobenzene	ND	30	ND	0.5	1	V
106-46-7	1,4-Dichlorobenzene	940	78	(160)	13	25	
123-91-1	1,4-Dioxane	ND	7.2	ND	(2)	1	U
540-84-1	2,2,4-Trimethylpentane	ND	2.3	ND	0.5	1	U
78-93-3	2-Butanone	12	1.5	(4.2)	0.5	1	
591-78-6	2-Hexanone	ND	2.0	ND	0.5	1	U
622-96-8	4-Ethyltoluene	ND	2.5	ND	0.5	1	
108-10-1	4-Methyl-2-pentanone	ND	2.0	ND	0.5	1	V
67-64-1	Acetone	320	59	130	25	25	
107-05-1	Allyl Chloride	ND	1.6	ND	(0.5)	1	U
71-43-2	Benzene	ND	1.6	ND	0.5	1	1
100-44-7	Benzyl Chloride	ND	2.6	ND	0.5	1	
75-27-4	Bromodichloromethane	ND	3.4	ND	0.5	1	
593-60-2	Bromoethene	ND	2.2	ND	0.5	1	
75-25-2	Bromoform	ND	5.2	ND	0.5	1	V

General Notes and Qualifiers:

--; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

- B; Analyte detected in the associated Method Blank
- S; Spike Recovery outside accepted recovery limits
- R; RPD outside accepted recovery limits
- T; Tentatively Identified Compound (TIC)
- E; Value exceeds linear range of calibration curve





TETRA TECH

Project: Work Order No: 16051545

Sample Identification GRPCE-VI-A-

Lab Number: 005A

Sample Type: Air, Can

Client:

Test Method: EPA Method TO-15A

Initial Pressure: -2.3 psig
Final Pressure: -2.3 psig

Canister ID: 14593

CAS#	Analyte	Results (ug/m³)	RL (ug/m³)	Results (ppbV)	RL (ppbV)	DF	Qual
74-83-9	Bromomethane	ND	19	ND	0.5	1	U
75-15-0	Carbon Disulfide	ND	1.6	ND	0.5	1	1
56-23-5	Carbon Tetrachloride	ND	3.1	ND	0.5	1	-
108-90-7	Chlorobenzene	ND	2.3	ND	0.5	1	
75-00-3	Chloroethane	ND	1.3	ND	0.5	1	
67-66-3	Chloroform	ND	2.4	ND	0.5	1	V
74-87-3	Chloromethane	1.7	1.0	0.80	0.5	1	
156-59-2	cis-1,2-Dichloroethene	ND	(2.0)	ND	0.5	1	U
10061-01-5	cis-1,3-Dichloropropene	ND	2.3	ND	0.5	1	-
110-82-7	Cyclohexane	ND	1.7	ND	0.5	1	
124-48-1	Dibromochloromethane	ND	4.3	ND	0.5	1	
75-71-8	Dichlorodifluoromethane	ND	2.5	ND	0.5	1	
76-14-2	Dichlorotetrafluoroethane	ND	3.5	ND	0.5	1	1.
141-78-6	Ethyl Acetate	ND	1.8	ND	0.5	1	
100-41-4	Ethylbenzene	ND	2.2	ND	0.5	1	
142-82-5	Heptane	ND	2.0	ND	0.5	1	
87-68-3	Hexachlorobutadiene	ND	5.3	ND	0.5	1	
110-54-3	Hexane	ND	V.8.	ND	(0.5)	1	V
67-63-0	Isopropyl Alcohol	2,800	61	(1,100)	25	25	Z:
108-38-3	m & p-Xylene	ND	(2.2)	ND	0.5	1	U
1634-04-4	Methyl tert-Butyl Ether	ND	1.8	ND	0.5	1	1
75-09-2	Methylene Chloride	ND	1.7	ND	0.5	1	
91-20-3	Naphthalene	ND	2.6	ND	0.5	1	- 1
95-47-6	o-Xylene	ND	2.2	ND	0.5	1	
115-07-1	Propene	ND	0.86	ND	0.5	1	
100-42-5	Styrene	ND	2.1	ND	(0.5)	1	V
127-18-4	Tetrachloroethene	12	3.4	1.8	0.5	1	
109-99-9	Tetrahydrofuran	(23)	1.5	7.8	0.5	1	

General Notes and Qualifiers:

-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve

Date: 27-May-16

Date Sampled: 5/25/2016

Date Received: 5/26/2016

Analysis Date: 5/27/2016

Analyst: DRS





Date: 27-May-16

Client:

TETRA TECH

Project:

Work Order No: 16051545

Sample Identification GRPCE-01

BASEMENT)

Date Sampled: 5/25/2016

Lab Number:

005A

Sample Type:

Air, Can

Date Received: 5/26/2016

Test Method:

EPA Method TO-15A

Analysis Date: 5/27/2016 Analyst: DRS

Initial Pressure:

-2.3 psig

Final Pressure:

-2.3 psig

Canister ID:

14593

A	nalyte	Results (ug/m³)	RL (ug/m³)	Results (ppbV)	RL (ppbV)	DF	Qual
Toluene		(5.4)	1.9	(1.4)	0.5	1	
trans-1,2-Dichloroethene		ND	(2.0)	ND	0.5	1	U
trans-1,3-Dichloropropene		ND	2.3	ND	0.5	1	
Trichloroethene		ND	2.7	ND	0.5	1	
Trichlorofluoromethane		ND	2.8	ND	0.5	1	
Trichlorotrifluoroethane		ND	3.8	ND	0.5	1	
Vinyl Acctate		ND	1.8	ND	0.5	1	1
Vinyl Chloride		ND	1.3	ND	0.5	1	V
	Toluene trans-1,2-Dichloroethene trans-1,3-Dichloropropene Trichloroethene Trichlorofluoromethane Trichlorotrifluoroethane Vinyl Acctate	trans-1,2-Dichloroethene trans-1,3-Dichloropropene Trichloroethene Trichlorofluoromethane Trichlorotrifluoroethane Vinyl Acctate	Toluene (ug/m³) Toluene (5.4) trans-1,2-Dichloroethene ND trans-1,3-Dichloropropene ND Trichloroethene ND Trichlorofluoromethane ND Trichlorotrifluoroethane ND Vinyl Acctate ND	Analyte (ug/m³) (ug/m³) Toluene	Analyte (ug/m³) (ug/m³) (ppbV) Toluene (5.4) 1.9 (1.4) trans-1,2-Dichloroethene ND 2.0 ND trans-1,3-Dichloropropene ND 2.3 ND Trichloroethene ND 2.7 ND Trichlorofluoromethane ND 2.8 ND Trichlorotrifluoroethane ND 3.8 ND Vinyl Acctate ND 1.8 ND	Toluene	Toluene (ug/m³) (ug/m³) (ppbV) (ppbV) DF



General Notes and Qualifiers:

--; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Client: TETRA TECH

Project: Work Order No: 16051545

Sample Identification GRPCE-04-7A Date Sampled: 5/25/2016

Lab Number: 002A Date Received: 5/26/2016

Sample Type: Air, Can Analysis Date: 5/27/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -1.7 psig
Final Pressure: -1.7 psig
Canister ID: 13957

CAS#	Analyte	Results (ug/m³)	RL (ug/m³)	Results (ppbV)	RL (ppbV)	DF	Qual
71-55-6	1,1,1-Trichloroethane	ND	2.7	ND	(0.5)	1	U
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.4	ND	0.5	1	1
79-00-5	1,1,2-Trichloroethane	ND.	2.7	ND	0.5	1	J
75-34-3	1,1-Dichloroethane	ND	2.0	ND	0.5	1	UJ
75-35-4	1,1-Dichloroethene	ND	2.0	ND	0.5	1	U
120-82-1	1,2,4-Trichlorobenzene	ND	3.7	ND	0.5	1	UJ
95-63-6	1,2,4-Trimethylbenzene	ND	2.5	ND	0.5	1	U
106-93-4	1,2-Dibromoethane	ND	3.8	ND	0.5	1	1
95-50-1	1,2-Dichlorobenzene	ND	3.0	ND	0.5	1	
107-06-2	1,2-Dichloroethane	ND	2.0	ND	0.5	1	
78-87-5	1,2-Dichloropropane	ND	2.3	ND	0.5	1	
108-67-8	1,3,5-Trimethylbenzene	ND	2.5	ND	0.5	1	
106-99-0	1,3-Butadiene	ND	1.1	ND	0.5	1	
541-73-1	1,3-Dichlorobenzene	ND	3.0	ND	(0.5)	1	V
106-46-7	1,4-Dichlorobenzene	(110)	3.0	(18)	0.5	1	
123-91-1	1,4-Dioxane	ND	(7.2)	, ND	(2)	1	U
540-84-1	2,2,4-Trimethylpentane	ND	2.3	ND	0.5	1	U
78-93-3	2-Butanone	4.9	1.5	(17)	0.5	1	
591-78-6	2-Hexanone	ND	2.0	ND	0.5	1	O
622-96-8	4-Ethyltoluene	ND	2.5	ND	0.5	1	
108-10-1	4-Methyl-2-pentanone	ND	2.0	ND	0.5	1	V
67-64-1	Acetone	(140)	59	61	25	25	
107-05-1	Allyl Chloride	ND	(1.6	ND	0.5	1	U
71-43-2	Benzene	ND	1.6	ND	0.5	1	
100-44-7	Benzyl Chloride	ND	2.6	ND	0.5	1	3/2
75-27-4	Bromodichloromethane	ND	3.4	ND	0.5	1	
593-60-2	Bromoethene	ND	2.2	ND	0.5	1	
75-25-2	Bromoform	ND	5.2	ND	(0.5)	1	V
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General Notes and Qualifiers:

--; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve

Date: 27-May-16



Client: TETRA TECH

Project: Work Order No: 16051545

Sample Identification GRPCE-01-JA-

Lab Number: 002A

Sample Type: Air, Can

Test Method: EPA Method TO-15A

Initial Pressure: -1.7 psig
Final Pressure: -1.7 psig
Canister ID: 13957

CAS#	Analyte	Results (ug/m³)	RL (ug/m³)	Results (ppbV)	RL (ppbV)	DF	Qual
74-83-9	Bromomethane	ND	1.9	ND	0.5	1	U
75-15-0	Carbon Disulfide	ND	1.6	ND	0.5	1	
56-23-5	Carbon Tetrachloride	ND	3.1	ND	0.5	1	
108-90-7	Chlorobenzene	ND	2.3	ND	0.5	1	
75-00-3	Chloroethane	ND	1.3	ND	0.5	1	
67-66-3	Chloroform	ND	(2.4)	ND	0.5	1	V
74-87-3	Chloromethane	(1.9)	1.0	0.92	0.5	1	
156-59-2	cis-1,2-Dichloroethene	ND	(2.0)	ND	0.5	1	U
10061-01-5	cis-1,3-Dichloropropene	ND	2.3	ND	0.5	1	
110-82-7	Cyclohexane	ND	1.7	ND	0.5	1	
124-48-1	Dibromochloromethane	ND	4.3	ND	0.5	1	
75-71-8	Dichlorodifluoromethane	ND	2.5	ND	0.5	1	1,
76-14-2	Dichlorotetrafluoroethane	ND	3.5	ND	0.5	1	V
141-78-6	Ethyl Acetate	6.4	1.8	(1.8)	0.5	1	
100-41-4	Ethylbenzene	ND	(2.2)	ND	10.5	1	U
142-82-5	Heptane	ND	2.0	ND	0.5	1	
87-68-3	Hexachlorobutadiene	ND	5.3	ND	0.5	1	V
110-54-3	Hexane	3.0	1.8	0.85	0.5	1	
67-63-0	Isopropyl Alcohol	21,000	61	8,700	25	25	V.
108-38-3	m & p-Xylene	ND	2.2	ND	9 0.5	1	U
1634-04-4	Methyl tert-Butyl Ether	ND	(1.8)	ND	(0.5)	1	U
75-09-2	Methylene Chloride	(10)	1.7	3.0	0.5	1	
91-20-3	Naphthalene	ND	2.6	ND	(0.5)	1	Ų
95-47-6	o-Xylene	ND	2.2	ND	0.5	1	
115-07-1	Propene	ND	0.86	ND	0.5	1	
100-42-5	Styrene	ND	2.1	ND	0.5	1	1,
127-18-4	Tetrachloroethene	ND	3.4	ND	0.5	1	V
109-99-9	Tetrahydrofuran	1.6	1.5	0.55	0.5	1	

General Notes and Qualifiers:

-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 27-May-16

Date Sampled: 5/25/2016

Date Received: 5/26/2016

Analysis Date: 5/27/2016

Analyst: DRS



Date: 27-May-16

Client: **TETRA TECH**

Project: Work Order No: 16051545

Sample Identification GRPCE-04

(MAIN)

Date Sampled: 5/25/2016

Date Received: 5/26/2016

Analysis Date: 5/27/2016

Analyst: DRS

Sample Type: Test Method:

Lab Number:

EPA Method TO-15A

Initial Pressure:

-1.7 psig

Air, Can

Final Pressure:

-1.7 psig

Canister ID:

13957

002A

CAS#	Analyte	Results (ug/m³)	RL (ug/m³)	Results (ppbV)	RL (ppbV)	DF	Qual
108-88-3	Toluene	(6.2)	1.9	(17)	0.5	1	
156-60-5	trans-1,2-Dichloroethene	ND	(2.0)	ND	05	1	U
10061-02-6	trans-1,3-Dichloropropene	ND	2.3	ND	0.5	1	
79-01-6	Trichloroethene	ND	2.7	ND	0.5	1	- 1
75-69-4	Trichlorofluoromethane	ND	2.8	ND	0.5	1	Ĺ
76-13-1	Trichlorotrifluoroethane	ND	3.8	ND	05	1	
108-05-4	Vinyl Acetate	ND	1.8	ND	0.5	1	1
75-01-4	Vinyl Chloride	ND	1.3	ND	05	1	V



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



TETRA TECH

Project: Work Order No: 16051545

Sample Identification GRPCE-01-A- (BASEMENT) Date Sampled: 5/25/2016

Lab Number: 004A Date Received: 5/26/2016

Sample Type: Air, Can Analysis Date: 5/27/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -0.7 psig
Final Pressure: -0.7 psig

Canister ID: 14057

Client:

CAS#	Analyte	Results (ug/m³)	RL (ug/m³)	Results (ppbV)	RL (ppbV)	DF	Qual
71-55-6	1,1,1-Trichlorocthane	ND	(2.7)	ND	(05)	1	U
79-34-5	1,1,2,2-Tetrachlorocthane	ND	3.4	ND	0.5	1	1
79-00-5	1,1,2-Trichlorocthane	ND	2.7	ND	0.5	1	J
75-34-3	1,1-Dichlorocthane	ND	2.0	ND	0.5	1	U-
75-35-4	1,1-Dichloroethene	ND	2.0	ND	0.5	1	U
120-82-1	1,2,4-Trichlorobenzene	ND	3.7	ND	0.5	1	U
95-63-6	1,2,4-Trimethylbenzene	ND	2.5	ND	0.5	1	U
106-93-4	1,2-Dibromoethane	ND	3.8	ND	0.5	1	
95-50-1	1,2-Dichlorobenzene	ND	3.0	ND	0.5	1	
107-06-2	1,2-Dichloroethane	ND	2.0	ND	0.5	1	
78-87-5	1,2-Dichloropropane	ND	2.3	ND	0.5	1	
108-67-8	1,3,5-Trimethylbenzene	ND	2.5	ND	0.5	1	
106-99-0	1,3-Butadiene	ND	1.1	ND	0.5	1	1,
541-73-1	1,3-Dichlorobenzene	ND	3.0	ND	0.5	1	V
106-46-7	1,4-Dichlorobenzene	1,000	78	(170)	13	25	
123-91-1	1,4-Dioxane	ND	[7.2]	ND	(2)	1	U
540-84-1	2,2,4-Trimethylpentane	ND	2.3	ND	0.5	1	U
78-93-3	2-Butanone	(26)	1.5	(8.7)	0.5	1	
591-78-6	2-Hexanone	ND	(2.0)	ND	0.5	1	U
622-96-8	4-Ethyltoluene	ND	2.5	ND	0.5	1	
108-10-1	4-Methyl-2-pentanone	ND	2.0	ND	0.5	1	V
67-64-1	Acetone	(360)	59	(150)	25	25	
107-05-1	Allyl Chloride	ND	16	ND	0.5	1	V
71-43-2	Benzene	ND	1.6	ND	0.5	1	
100-44-7	Benzyl Chloride	ND	26	ND	0.5	1	
75-27-4	Bromodichloromethane	ND	3.4	ND	0.5	1	
593-60-2	Bromoethene	ND	2.2	ND	0.5	1	1.
75-25-2	Bromoform	ND	5.2	ND	(05)	1	V

General Notes and Qualifiers:

--; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 27-May-16



Client: TETRA TECH

Project: Work Order No: 16051545

Sample Identification GRPCE-07-1A BASEMENT) Date Sampled: 5/25/2016

Lab Number: 004A Date Received: 5/26/2016

Sample Type: Air, Can Analysis Date: 5/27/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -0.7 psig
Final Pressure: -0.7 psig
Canister ID: 14057

CAS#		Analyte	Results (ug/m³)	RL (ug/m³)	Results (ppbV)	RL (ppbV)	DF	Qual
74-83-9	Bromomethane		ND	19	ND	(0.5)	1	U
75-15-0	Carbon Disulfide		ND	116	ND	0.5	1	
56-23-5	Carbon Tetrachloride		ND	3.1	ND	0.5	1	
108-90-7	Chlorobenzene		ND	2.3	ND	0.5	1	
75-00-3	Chlorocthane		ND	1.3	ND	0.5	1	
67-66-3	Chloroform		ND	2.4	ND	05	1	V
74-87-3	Chloromethane		(1.6)	1.0	(0.77)	0.5	1	
156-59-2	cis-1,2-Dichloroethene		ND	(2.0	ND	05	1	U
10061-01-5	cis-1,3-Dichloropropene		ND	2.3	ND	0.5	1	1
110-82-7	Cyclohexane		ND	1.7	ND	0.5	1	
124-48-1	Dibromochloromethane		ND	4.3	ND	0.5	1	
75-71-8	Dichlorodifluoromethane		ND	2.5	ND	0.5	1	1
76-14-2	Dichlorotetrafluoroethane		ND	3.5	ND	0.5	1	
141-78-6	Ethyl Acetate		ND	1.8	ND	0.5	1	
100-41-4	Ethylbenzene		ND	2.2	ND	0.5	1	
142-82-5	Heptane		ND	2.0	ND	0.5	1	
87-68-3	Hexachlorobutadiene		ND	5.3	ND	0.5	1	
110-54-3	Hexane		ND	1.8	ND	0.5	1	V
67-63-0	Isopropyl Alcohol		2,400	61	(1,000)	25	25	Z2
108-38-3	m & p-Xylene		ND	(2.2	ND	05	1	U
1634-04-4	Methyl tert-Butyl Ether		ND	1.8	ND	0.5	1	1
75-09-2	Methylene Chloride		ND	1.7	ND	0.5	1	
91-20-3	Naphthalene		ND	2.6	ND	0.5	1	
95-47-6	o-Xylene		ND	2.2	ND	0.5	1	
115-07-1	Propene		ND	0.86	ND	0.5	1	
100-42-5	Styrene		ND	2.1	ND	0.5	1	V
127-18-4	Tetrachloroethene		15	3.4	(2.2)	0.5	1	
109-99-9	Tetrahydrofuran		(50)	1.5	(17)	0.5	1	

General Notes and Qualifiers:

-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve

Date: 27-May-16





Date: 27-May-16

Client:

TETRA TECH

Project:

Work Order No: 16051545

Sample Identification GRPCE-01-14

Lab Number:

BASEMENT)

Date Sampled: 5/25/2016

004A

Date Received: 5/26/2016

Sample Type:

Air, Can

Analysis Date: 5/27/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-0.7 psig

Final Pressure:

-0.7 psig

Canister ID:

14057

CAS#	Analyte	Results (ug/m³)	RL (ug/m³)	Results (ppbV)	RL (ppbV)	DF	Qual
108-88-3	Toluene	(5.5)	1.9	(1.5)	0.5	1	
156-60-5	trans-1,2-Dichloroethene	ND	2.0	ND	0.5	1	Ų
10061-02-6	trans-1,3-Dichloropropene	ND	2.3	ND	0.5	1	
79-01-6	Trichloroethene	ND	2.7	ND	0.5	1	
75-69-4	Trichlorofluoromethane	ND	2.8	ND	0.5	1	
76-13-1	Trichlorotrifluoroethane	ND	3.8	ND	0.5	1	
108-05-4	Vinyl Acetate	ND	1.8	ND	0.5	1	
75-01-4	Vinyl Chloride	ND	1.3	ND	05	1	V



^{--;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Client: TETRA TECH

Project: Work Order No: 16051545

Sample Identification GRPCE-MAIN) Date Sampled: 5/25/2016

Lab Number: 003A Date Received: 5/26/2016

Sample Type: Air, Can Analysis Date: 5/27/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -1.2 psig
Final Pressure: -1.2 psig
Canister ID: 14114

CAS#	Analyte	Results (ug/m³)	RL (ug/m³)	Results (ppbV')	RL (ppbV)	DF	Qual
71-55-6	1,1,1-Trichlorocthane	ND	(2.7)	ND	0.5	1	U
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.4	ND	0.5	1	
79-00-5	1,1,2-Trichloroethane	ND	2.7	ND	0.5	1	V
75-34-3	1,1-Dichloroethane	ND	2.0	ND	0.5	1	UJ
75-35-4	1,1-Dichloroethene	ND	20	ND	0.5	1	U
120-82-1	1,2,4-Trichlorobenzene	(6.5)	3.7	(0.87)	0.5	1	J
95-63-6	1,2,4-Trimethylbenzene	ND	(2.5)	ND	(05)	1	U
106-93-4	1,2-Dibromoethane	ND	3.8	ND	0.5	1	1
95-50-1	1,2-Dichlorobenzene	ND	3.0	ND	0.5	1	1
107-06-2	1,2-Dichloroethane	ND	2.0	ND	0.5	1	
78-87-5	1,2-Dichloropropane	ND	2.3	ND	0.5	1	
108-67-8	1,3,5-Trimethylbenzene	ND	2.5	ND	0.5	1	
106-99-0	1,3-Butadiene	ND	1.1	ND	0.5	1	
541-73-1	1,3-Dichlorobenzene	ND	3.0	ND	0.5	1	V
106-46-7	1,4-Dichlorobenzene	(310)	78	(52)	13	25	
123-91-1	1,4-Dioxane	ND	/7.2	ND	12)	1	U
540-84-1	2,2,4-Trimethylpentane	ND	2.3	ND	(0.5)	1	U
78-93-3	2-Butanone	7.0	1.5	2.4	0.5	1	
591-78-6	2-Hexanone	ND	2.0	ND	(0.5	1	U
622-96-8	4-Ethyltoluene	ND	2.5	ND	(0.5)	1	
108-10-1	4-Methyl-2-pentanone	ND	(2.0)	ND	(0.5)	1	V
67-64-1	Acetone	160	59	(69)	25	25	
107-05-1	Allyl Chloride	ND	1.6	ND	(05)	1	U
71-43-2	Benzene	ND	1.6	ND	0.5	1	1
100-44-7	Benzyl Chloride	ND	2.6	ND	0.5	1	
75-27-4	Bromodichloromethane	ND	3.4	ND	0.5	1	
593-60-2	Bromoethene	ND	2.2	ND	05	1	
75-25-2	Bromoform	ND	5.2	ND	05	1	V
2	- 3 O 155 Information and qualifolds are not applicable	* 1 1 1	to detected in		Mathad Dla		

General Notes and Qualifiers:

Date: 27-May-16

^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

B, Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 27-May-16

Client: TETRA TECH

Project: Work Order No: 16051545

Sample Identification GRPCF 01-A-1 (MAIN) Date Sampled: 5/25/2016

Lab Number: 003A T Date Received: 5/26/2016

Sample Type: Air, Can Analysis Date: 5/27/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -1.2 psig
Final Pressure: -1.2 psig

Canister ID: 14114

CAS#		Analyte	Results (ug/m³)	RL (ug/m³)	Results (ppbV)	RL (ppbV)	DF	Qual
74-83-9	Bromomethane		NI	(1.9	ND	(0.5)	1	U
75-15-0	Carbon Disulfide		(1.9)	1.6	0.60	0.5	1	
56-23-5	Carbon Tetrachloride		NE	31	ND	(0.5)	1	U
108-90-7	Chlorobenzene		NE	2.3	ND	0.5	1	1
75-00-3	Chloroethane		NI	1.3	ND	0.5	1	
67-66-3	Chloroform		NI	2.4	ND	0.5	1	V
74-87-3	Chloromethane		(1.9)	1.0	0.92	0.5	1	
156-59-2	cis-1,2-Dichlorocthene		NI	2.0	ND	(05)	1	Y
10061-01-5	cis-1,3-Dichloropropene		NI	2.3	ND	0.5	1	
110-82-7	Cyclohexane		NI	1.7	ND	0.5	1	
124-48-1	Dibromochloromethane		NI	4.3	ND	0.5	1	
75-71-8	Dichlorodifluoromethane		NI	2.5	ND	0.5	1	
76-14-2	Dichlorotetrafluoroethane		NI	3.5	ND	0.5	1	V
141-78-6	Ethyl Acetate		3.5	1.8	(0.98)	0.5	1	
100-41-4	Ethylbenzene		NI	2.2	ND	(0.5)	1	U
142-82-5	Heptane		NI	2.0	ND	0.5	1	
87-68-3	Hexachlorobutadiene		NI	53	ND	0.5	1	V
110-54-3	Hexane		1.9	1.8	0.54	0.5	1	
67-63-0	Isopropyl Alcohol		3,300	61	1,300	25	25	ZJ
108-38-3	m & p-Xylene		NI	2.2	ND	(0.5)	1	U
1634-04-4	Methyl tert-Butyl Ether		NI	1.8	ND	0.5	1	
75-09-2	Methylene Chloride		NI	1.7	ND	0.5	1	
91-20-3	Naphthalene		NI	2.6	ND	0.5	1	
95-47-6	o-Xylene		NI	2.2	ND	0.5	1	
115-07-1	Propene		NI	0.86	ND	0.5	1	
100-42-5	Styrene		NI	2.1	ND	0.5	1	
127-18-4	Tetrachloroethene		NI	3.4	ND	0.5	1	V
109-99-9	Tetrahydrofuran		(4.5)	1.5	(1.5)	0.5	1	

General Notes and Qualifiers:

-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 27-May-16

Client: TETRA TECH

Project: Work Order No: 16051545

Sample Identification GRPCE-01

MAIN) Date Sampled: 5/25/2016

Lab Number: 003A Date Received: 5/26/2016
Sample Type: Air, Can Analysis Date: 5/27/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -1.2 psig

Final Pressure: -1.2 psig
Canister ID: 14114

CAS#	Analyte	Results (ug/m³)	RL (ug/m³)	Results (ppbV)	RL (ppbV)	DF	Qual
108-88-3	Toluene	(8.0)	19	(2.1)	0.5	1	
156-60-5	trans-1,2-Dichloroethene	ND	20	ND	0.5	1	U
10061-02-6	trans-1,3-Dichloropropene	ND	23	ND	0.5	1	1
79-01-6	Trichlorocthene	ND	2.7	ND	0.5	1	
75-69-4	Trichlorofluoromethane	ND	2.8	ND	0.5	1	
76-13-1	Trichlorotrifluoroethane	ND	3.8	ND	0.5	1	
108-05-4	Vinyl Acetate	ND	1.8	ND	0.5	1	
75-01-4	Vinyl Chloride	ND	13	ND	0.5	1	V

General Notes and Qualifiers:

-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Date: 27-May-16

Client: TETRA TECH

Project: Work Order No: 16051545

Sample Identification GRPCE-01-1A-1156 (BASEMENT)

Date Sampled: 5/26/2016

Lab Number: 006A Date Received: 5/26/2016

Sample Type: Air, Can Analysis Date: 5/27/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -1.4 psig
Final Pressure: -1.4 psig

Canister ID: 14201

CAS#	Analyte	Results (ug/m³)	RL (ug/m³)	Results (ppbV)	RL (ppbV)	DF	Qual
71-55-6	1,1,1-Trichlorocthane	ND	(27)	ND	(0.5)	1	U
79-34-5	1,1,2,2-Tetrachloroethane	ND	134	ND	0.5	1	1
79-00-5	1,1,2-Trichloroethane	ND	2.7	ND	0.5	1	V
75-34-3	1,1-Dichlorocthane	ND	20	ND	0.5	1	UJ
75-35-4	1,1-Dichloroethene	ND	2.0	ND	0.5	1	U
120-82-1	1,2,4-Trichlorobenzene	ND	3.7	ND	0.5	1	UJ
95-63-6	1,2,4-Trimcthylbenzene	ND	2.5	ND	0.5	1	U
106-93-4	1,2-Dibromoethane	ND	3.8	ND	0.5	1	
95-50-1	1,2-Dichlorobenzene	ND	3.0	ND	0.5	1	1
107-06-2	1,2-Dichloroethane	ND	2.0	ND	0.5	1	
78-87-5	1,2-Dichloropropane	ND	2.3	ND	0.5	1	,
108-67-8	1,3,5-Trimethylbenzene	ND	2.5	ND	(05)	1	V
106-99-0	1,3-Butadiene	(2.3)	H	(1.0)	0.5	1	
541-73-1	1,3-Dichlorobenzene	ND	(3.0)	ND	(0.5)	1	U
106-46-7	1,4-Dichlorobenzene	(3.5)	3.0	(0.58)	0.5	1	
123-91-1	1,4-Dioxane	ND	7.2	ND	(2)	1	U
540-84-1	2,2,4-Trimethylpentane	ND	2,3	ND	(0.5)	1	U
78-93-3	2-Butanone	(3.6)	1.5	(1.2)	0.5	1	
591-78-6	2-Hexanone	ND	(2.0)	ND	0.5	1	Ų
622-96-8	4-Ethyltoluene	ND	2.5	ND	0.5	1	
108-10-1	4-Methyl-2-pentanone	ND	2.0	ND	(0.5)	1	V
67-64-1	Acetone	(73)	59	(31)	25	25	
107-05-1	Allyl Chloride	ND	1.6	ND	(0.5)	1	U
71-43-2	Benzene	(2,2)	1.6	(0.68)	0.5	1	
100-44-7	Benzyl Chloride	ND	2.6	ND	(0.5)	1	U
75-27-4	Bromodichloromethane	ND	3.4	ND	0.5	1	
593-60-2	Bromoethene	ND	2.2	ND	0.5	1	
75-25-2	Bromoform	ND	5.2	ND	(0.5)	1	V

General Notes and Qualifiers:

^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 27-May-16

Client: TETRA TECH

Project: Work Order No: 16051545

Sample Identification GRPCE-91-7A- (BASEMENT) Date Sampled: 5/26/2016

Lab Number: 006A Date Received: 5/26/2016

Sample Type: Air, Can Analysis Date: 5/27/2016

Test Method: EPA Method TO-15A Analyst: DRS
Initial Pressure: -1.4 psig

Final Pressure: -1.4 psig
Canister ID: 14201

CAS#		Analyte	Results (ug/m³)	RL (ug/m³)	Results (ppbV)	RL (ppbV)	DF	Qual
74-83-9	Bromomethane		ND	1.9	ND	0.5	1	V
75-15-0	Carbon Disulfide		ND	1.6	ND	0.5	1	- 1
56-23-5	Carbon Tetrachloride		ND	3.1	ND	0.5	1	
108-90-7	Chlorobenzene		ND	2.3	ND	0.5	1	
75-00-3	Chloroethane		ND	1.3	ND	0.5	1	V
67-66-3	Chloroform		6.0	2.4	(1.2)	0.5	1	
74-87-3	Chloromethane		2.1	1.0	(1.0)	0.5	1	
156-59-2	cis-1,2-Dichlorocthene		ND	(2.0)	ND	0.5	1	U
10061-01-5	cis-1,3-Dichloropropene		ND	2.3	ND	0.5	1	1
110-82-7	Cyclohexane		ND	1.7	ND	0.5	1	-3
124-48-1	Dibromochloromethane		ND	4.3	ND	0.5	1	
75-71-8	Dichlorodifluoromethane		ND	2.5	ND	0.5	1	1
76-14-2	Dichlorotetrafluoroethane		ND	3.5	ND	(0.5)	1	V
141-78-6	Ethyl Acetate		3.0	1.8	0.82	0.5	1	
100-41-4	Ethylbenzene		ND	(2.2)	ND	(0.5)	1	U
142-82-5	Heptane		(3.4)	2.0	(0.83)	0.5	1	
87-68-3	Hexachlorobutadiene		ND	5.3	ND	(0.5)	1	U
110-54-3	Hexane		ND	(1.8)	ND	(0.5)	1	U
67-63-0	Isopropyl Alcohol		(11)	2.5	4.5	1	1	
108-38-3	m & p-Xylene		5.1	2.2	(1.2)	0.5	1	
1634-04-4	Methyl tert-Butyl Ether		ND	1.8	ND	(05)	1	D
75-09-2	Methylene Chloride		ND	1.7	ND	0.5	1	
91-20-3	Naphthalene		ND	2.6	ND	0.5	1	1
95-47-6	o-Xylene		ND	2.2	ND	0.5	1	1
115-07-1	Propene		ND	0.86	ND	0.5	1	
100-42-5	Styrene		ND	2.1	ND	0.5	1	
127-18-4	Tetrachloroethene		ND	3.4	ND	0.5	1	
109-99-9	Tetrahydrofuran		ND	1.5	ND	(0.5)	1	V

General Notes and Qualifiers:

-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Date: 27-May-16

Client:

TETRA TECH

Project:

Work Order No: 16051545

Sample Identification GRPCE-01

Date Sampled: 5/26/2016

Lab Number:

(BASEMENT)

Sample Type:

006A

Date Received: 5/26/2016

Test Method:

Air, Can

Analysis Date: 5/27/2016

Initial Pressure:

EPA Method TO-15A

Analyst: DRS

......

-1.4 psig

Final Pressure: Canister ID: -1.4 psig

CAS#		Analyte	Results (ug/m³)	RL (ug/m³)	Results (ppbV)	RL (ppbV)	DF	Qual
108-88-3	Toluene		(14)	. 1.9	(3.8)	0.5	1	
156-60-5	trans-1,2-Dichlorocthene		ND	2.0	ND	0.5	1	U
10061-02-6	trans-1,3-Dichloropropene		ND	2.3	ND	0.5	1	
79-01-6	Trichlorocthene		ND	2.7	ND	0.5	1	
75-69-4	Trichlorofluoromethane		ND	2.8	ND	0.5	1	
76-13-1	Trichlorotrifluoroethane		ND	3.8	ND	0.5	1	
108-05-4	Vinyl Acetate		ND	1.8	ND	0.5	1	
75-01-4	Vinyl Chloride		ND	1.3	ND	0.5	1	1



General Notes and Qualifiers:

--; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Date: 27-May-16

Client:

TETRA TECH

Project:

Work Order No: 16051545

Sample Identification GRPCE-01

(MAIN)

Date Sampled: 5/26/2016

Lab Number:

TI

Date Received: 5/26/2016

Sample Type:

Air, Can

007A

Analysis Date: 5/27/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-1.7 psig

Final Pressure:

-1.7 psig

Canister ID:

14101

CAS#	Analyte	Results (ug/m³)	RL (ug/m³)	Results (ppbV)	RL (ppbV)	DF	Qual
71-55-6	1,1,1-Trichloroethane	ND	2.7	ND	0.5	1	U
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.4	ND	0.5	1	
79-00-5	1,1,2-Trichloroethane	ND	2.7	ND	0.5	1	1
75-34-3	1,1-Dichloroethane	ND	2.0	ND	0.5	1	UJ
75-35-4	1,1-Dichloroethene	ND	2.0	ND	0.5	1	U
120-82-1	1,2,4-Trichlorobenzene	ND	3.7	ND	0.5	1	UJ
95-63-6	1,2,4-Trimethylbenzene	ND	2.5	ND	0.5	1	U
106-93-4	1,2-Dibromoethane	ND	3.8	ND	0.5	1	1
95-50-1	1,2-Dichlorobenzene	ND	3.0	ND	0.5	1	
107-06-2	1,2-Dichloroethane	ND	2.0	ND	0.5	1	1
78-87-5	1,2-Dichloropropane	(45)	2.3	(0.97)	0.5	1	
108-67-8	1,3,5-Trimethylbenzene	ND	2.5	ND	(0.5)	1	U
106-99-0	1,3-Butadiene	(2.4)	1,1	(1.1)	0,5	1	
541-73-1	1,3-Dichlorobenzene	ND	3.0	ND	0.5	1	U
106-46-7	1,4-Dichlorobenzene	ND	3.0	ND	0.5	1	1
123-91-1	1,4-Dioxane	ND	7.2	ND	2	1	
540-84-1	2,2,4-Trimethylpentane	ND	2.3	ND	0.5	1	V
78-93-3	2-Butanone	(3.4)	1.5	(1.2)	0.5	1	
591-78-6	2-Hexanone	ND	(2.0	ND	(0.5)	1	D
622-96-8	4-Ethyltoluene	ND	2.5	ND	0.5	1	
108-10-1	4-Methyl-2-pentanone	ND	2.0	ND	0.5	1	V
67-64-1	Acetone	(59)	2.4	(25)	1]	
107-05-1	Allyl Chloride	ND	(1.6)	ND	(0.5)	1	U
71-43-2	Benzene	(2.2)	1.6	(0.70)	0.5	1	
100-44-7	Benzyl Chloride	ND	(2.6)	ND	0.5	1	U
75-27-4	Bromodichloromethane	ND	3.4	ND	0.5	1	1
593-60-2	Bromoethene	ND	2.2	ND	0.5	1	
75-25-2	Bromoform	ND	5.2	ND	0.5	1	V

General Notes and Qualifiers:

-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Date: 27-May-16

Client:

TETRA TECH

Project:

Work Order No: 16051545

Lab Number:

Sample Identification GRPCE-01-A (MAIN)

Date Sampled: 5/26/2016

007A

Date Received: 5/26/2016

Sample Type:

Air, Can

Analysis Date: 5/27/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-1.7 psig

Final Pressure: Canister ID: -1.7 psig

Results RI. Results CAS# (ug/m³) (ug/m3) (ppbV) (ppbV) Analyte DF Qual 74-83-9 Bromomethane ND 1.9 ND 0.5 ND 75-15-0 Carbon Disulfide 1.6 ND 0.5 Carbon Tetrachloride ND 56-23-5 3.1 ND 0.5 Chlorobenzene ND 108-90-7 2.3 ND 0.5 ND 75-00-3 Chloroethane 1.3 ND 0.5 67-66-3 Chloroform 61 1.3 .4 1.0 Chloromethane ND 0.5 74-87-3 ND 156-59-2 cis-1.2-Dichloroethene ND 2.0 ND 0.5 10061-01-5 ND 2.3 0.5 cis-1,3-Dichloropropene ND 110-82-7 ND 1.7 ND 0.5 Cyclohexane 124-48-1 Dibromochloromethane ND 4.3 ND 0.5 Dichlorodifluoromethane ND 75-71-8 2.5 ND 05 76-14-2 Dichlorotetrafluoroethane ND 3.5 ND 05 141-78-6 Ethyl Acetate 3.1) 1.8 0.85 0.5 2.2 100-41-4 Ethylbenzene ND ND 0.5 2.7 2.0 0.66 142-82-5 Heptane Hexachlorobutadiene 5.3 0.5 ND ND 1 87-68-3 Hexane ND ND 0.5 1 110-54-3 1.8 3.6 67-63-0 Isopropyl Alcohol 8.9 2.5 1 2.2 108-38-3 m & p-Xylene 1.2 0.5 Methyl tert-Butyl Ether 0.5 1634-04-4 ND 1.8 ND 1.7 75-09-2 Methylene Chloride ND ND 0.5 Naphthalene 91-20-3 ND 2.6 ND 0.5 1 o-Xylene 95-47-6 ND 2.2 0.5 ND 1 ND 0 86 115-07-1 Propene ND 0.5 1 100-42-5 Styrene ND 2.1 ND 0.5 1 127-18-4 Tetrachloroethene ND 3.4 ND 0.5 1 109-99-9 Tetrahydrofuran ND 15 ND 0.5

General Notes and Qualifiers:

-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Date: 27-May-16

Client:

TETRA TECH

Project:

Work Order No: 16051545

Sample Identification GRPCE-01-4

(IVI)

Date Sampled: 5/26/2016

Lab Number:

007A

Data Danianda 5/26/2016

Sample Type:

Air, Can

Date Received: 5/26/2016 Analysis Date: 5/27/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-1.7 psig

Final Pressure:

-1.7 psig

Canister ID:

14101

CAS#		Analyte	Results (ug/m³)	RL (ug/m³)	Results (ppbV)	RL (ppbV)	DF	Qual
108-88-3	Toluene		(12)	1.9	(31)	0.5	1	
156-60-5	trans-1,2-Dichloroethene		ND	20	ND	0.5	1	U
10061-02-6	trans-1,3-Dichloropropene		ND	2.3	ND	0.5	1	1
79-01-6	Trichlorocthene		ND	2.7	ND	0.5	1	
75-69-4	Trichlorofluoromethane		ND	2.8	ND	0.5	1	
76-13-1	Trichlorotrifluoroethane		ND	3.8	ND	0.5	1	
108-05-4	Vinyl Acetate		ND	1.8	ND	0.5	1	1,
75-01-4	Vinyl Chloride		ND	1.3	ND	05	1	V



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve

Site Name	Grand Rapids VI ER		TDD No.	S05-0001-1605-010
Document Tracking No.	0858B			
Data Reviewer (signature and date)	Jeoaca a. Vickers June 14, 2016		Technical Reviewer (signature and date)	Hang N. Elis III 15 June 2016
Laboratory Report No.	16051635		Laboratory	Bureau Veritas/Novi, MI
Analyses	Volatile organic compounds (VOCs) by EPA	М	lethod TO-15	
Samples and Matrix	Fifteen air samples (including one field dup	olic	ate)	
Field Duplicate Pairs	GRPCE-03-IA- (2)/GRPCE-03-IA-	:)-D)P	
Field Blanks	None			

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection of results was required for this data set. The data is usable as qualified.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrument Performance Checks:

/ithin riteria	Exceedance/Notes
Υ	

Initial Calibration:

Within Criteria	Exceedance/Notes
Υ	

Continuing Calibration:

Within Criteria	Exceedance/Notes
N	The percent differences for cis-1,2-dichloroethene and trans-1,2-dichloroethene exceeded the acceptance criteria. The associated non-detect results were qualified as estimated (UJ).

Calibration Verification:

Within Criteria	Exceedance/Notes
NA	

Method blanks:

Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Υ	

Field blanks:

Within Criteria	Exceedance/Notes
NA	



Interference	Check Sam	ples (ICS)	(ICP	metals only	/):
--------------	-----------	------------	------	-------------	-----

Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within	Exceedance/Notes
Criteria	Exceedance/ Notes
NA	



Field duplicates:

Within Criteria	Exceedance/Notes
Υ	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Υ	

Sample dilutions:

Within Criteria	Exceedance/Notes				
N	Sample GRPCE-01-IA-BASEMENT) required a 5-fold dilution for tetrachloroethene to bring the result within the calibration range.				

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
Y	



Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Fxceedance/Notes				
Υ	Note: There is no indication that results below the reporting limits, but above method detection limits, were reported.				

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

Other labe	
Within	Even adams / Nintes
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.





14610

Canister ID:

Client:	TETRA TECH		
Project:		Work Order No:	16051635
Sample Identification	on GRPCE-01-IA BASEMENT)	Date Sampled:	5/28/2016
Lab Number:	004A	Date Received:	5/31/2016
Sample Type:	Air, Can	Analysis Date:	5/31/2016
Test Method:	EPA Method TO-15A	Analyst:	DRS
Initial Pressure:	-1.37 psig		
Final Pressure:	-1.37 psig		

CAS#		Analyte	Results (ug/m³)	RL (ug/m³)	Results (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichlorocthene		ND	(2.0)	ND	(0.5)	1	UJ
127-18-4	Tetrachlorocthene		(130)	17	(19)	2.5	5	
156-60-5	trans-1,2-Dichloroethene		ND	(2.0	ND	(0.5)	1	UJ
79-01-6	Trichloroethene		ND	2.7	ND	0.5	1	U
75-01-4	Vinyl Chloride		ND	1.3	ND	0.5	1	U



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL: Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Client:		TETRA TECH							
Project:					Work Order No:		16051635		
Sample Ide	ntificat	ion GRPCE-01-IA-	MAIN)		Date	Sampled:	5/28/201	6	
Lab Number: 003		003A			Date	Received:	5/31/201	6	
Sample Ty	pe:	Air, Can			Anal	ysis Date:	5/31/201	16	
Test Metho	od:	EPA Method TO-	O-15A Analyst:		DRS				
Initial Pres	sure:	-1.05 psig							
Final Press	ure:	-1.05 psig							
Canister II):	14068							
CAS#			Analyte	Results (ug/m³)	RL (ug/m³)	Results (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-l	,2-Dichloroethene		ND	2.0	ND	(0.5)	1	UJ
127-18-4	Tetr	achloroethene		(30)	3.4	(4.5)	0.5	1	
156-60-5	trans	s-1,2-Dichloroethene		ND	(2.0	ND	(0.5)	1	UJ
79-01-6	Tric	hloroethene		ND	2.7	ND	0.5	1	U
75-01-4	Vin	vl Chloride		ND	1.3	ND	0.5	1	U



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Client:		TETRA TECH	
Project:			Work Order No: 16051635
Sample Ide	ntificat	tion GRPCE-01-IA-1 (BASEMENT)	Date Sampled: 5/28/2016
Lab Numbe	er:	001A	Date Received: 5/31/2016
Sample Typ	pe:	Air, Can	Analysis Date: 5/31/2016
Test Metho	d:	EPA Method TO-15A	Analyst: DRS
Initial Pres	sure:	-0.7 psig	
Final Press	ure:	-0.7 psig	
Canister II):	14121	
CAS#		Analyte	Results RL Results RL (ug/m³) (ug/m³) (ppbV) (ppbV) DF Qual
156-59-2	cis-	1,2-Dichloroethene	ND (2.0 ND (0.5) 1 US
127-18-4	Tetr	rachloroethene	130 34 19 0.5 1
156-60-5	tran	s-1,2-Dichlorocthene	ND (2.0) ND (0.5) 1 U
79-01-6	Tric	chloroethene	ND 2.7 ND 0.5 1 U
75-01-4	Vin	yl Chloride	ND 1.3 ND 0.5 1 U



- -; Information not available or not applicable.
- ND; Less than the indicated limit of detection (LOD)
- RL; Report Limit
- J; Value is between the MDL and Reporting Limit, estimated r
- B; Analyte detected in the associated Method Blank
- S; Spike Recovery outside accepted recovery limits
- R; RPD outside accepted recovery limits
- T; Tentatively Identified Compound (TIC)
- E; Value exceeds linear range of calibration curve



Client:	TETRA TECH		
Project:		Work Order No:	16051635
Sample Identificat	ion GRPCE-01-IA-1 (MAIN)	Date Sampled:	5/28/2016
Lab Number:	002A	Date Received:	5/31/2016
Sample Type:	Air, Can	Analysis Date:	5/31/2016
Test Method:	EPA Method TO-15A	Analyst:	DRS
Initial Pressure:	-2.22 psig		
Final Pressure:	-2.22 psig		
Canister ID:	14574		

CAS#	Ar	nalyte	Results (ug/m³)	RL (ug/m³)	Results (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene		ND	(20)	ND	(0.5)	1	UJ
127-18-4	Tetrachloroethene		20	3.4	(3.0)	0.5	1	
156-60-5	trans-1,2-Dichloroethene		ND	(2.0)	ND	(0.5)	1	UJ
79-01-6	Trichloroethene		ND	2.7	ND	0.5	1	U
75-01-4	Vinyl Chloride		ND	1,3	ND	0.5	1	U



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL: Report Limit

J, Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Trichloroethene

Vinyl Chloride

Date: 01-Jun-16

Client:		TETRA TECH							
Project:				Work Order No:			16051635		
Sample Ide	ntificati	on GRPCE-02-IA	BASEMENT)		Date	Sampled:	5/30/201	6	
Lab Numbe	er:	009A			Date	Received:	5/31/201	6	
Sample Typ	pe:	Air, Can			Anal	ysis Date:	: 5/31/2016		
Test Method: EPA Method		EPA Method TO-15A		Analyst:		DRS			
Initial Pres	sure:	-1.36 psig							
Final Press	ure:	-1.36 psig							
Canister ID):	14125							
CAS#		Ana	alyte	Results (ug/m³)	RL (ug/m³)	Results (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1	,2-Dichloroethene		ND	(2.0) ND	0.5	1	UJ
127-18-4 156-60-5		achloroethene -1,2-Dichloroethene	14 m 4 m	(110) ND	3.4	ND ND	0.5	1	UJ



79-01-6

75-01-4

ND

ND

2.7

1.3

ND

ND

0.5

0.5

^{--;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S. Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



cis-1,2-Dichloroethene

trans-1.2-Dichloroethene

Tetrachloroethene

Trichloroethene Vinyl Chloride

156-59-2

127-18-4

156-60-5

79-01-6

75-01-4

Date: 01-Jun-16

TETRA TECH						
		Work (Order No:	1605163	5	
ion GRPCE-02-IA-MAIN)		Date	Sampled:	5/30/201	6	
010A		Date	Received:	5/31/201	6	
Air, Can		Anal	ysis Date:	5/31/201	6	
EPA Method TO-15A			Analyst:	DRS		
-2.08 psig						
-2.08 psig						
14142						
Analyte	Results (ug/m³)	RL (ug/m³)	Results (pphV)	RL (ppbV)	DF	Qual
	ion GRPCE-02-IA-MAIN) 010A Air, Can EPA Method TO-15A -2.08 psig -2.08 psig 14142	ion GRPCE-02-IA MAIN) 010A Air, Can EPA Method TO-15A -2.08 psig -2.08 psig 14142 Results	Work 6 ion GRPCE-02-IA- MAIN) Date 010A Air, Can EPA Method TO-15A -2.08 psig -2.08 psig 14142 Results RL	Work Order No: ion GRPCE-02-IA- MAIN) Date Sampled: 010A Air, Can EPA Method TO-15A -2.08 psig -2.08 psig 14142 Results RL Results	Work Order No: 1605163 ion GRPCE-02-IA- MAIN) Date Sampled: 5/30/201 010A Air, Can EPA Method TO-15A -2.08 psig -2.08 psig 14142 Results RL Results RL	Work Order No: 16051635 ion GRPCE-02-IA- MAIN) Date Sampled: 5/30/2016 010A Air, Can EPA Method TO-15A -2.08 psig -2.08 psig 14142 Results RL Results RL

ND

ND

ND

ND

(20)

2.0

2.0

2.7

ND

ND

ND

ND

0.5

(3.0)



UJ

^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Tetrachloroethene

Trichloroethene Vinyl Chloride

trans-1,2-Dichlorocthene

Date: 01-Jun-16

Client:	TETRA TECH	
Project:		Work Order No: 16051635
Sample Identificat	ion GRPCE-02-IA-1 (BASEMENT)	Date Sampled: 5/30/2016
Lab Number:	008A	Date Received: 5/31/2016
Sample Type:	Air, Can	Analysis Date: 5/31/2016
Test Method:	EPA Method TO-15A	Analyst: DRS
Initial Pressure:	-1.27 psig	
Final Pressure:	-1.27 psig	
Canister ID:	14245	
CAS#	Analyte	Results RL Results RL (ug/m³) (ug/m³) (ppbV) (ppbV) DF Qual
156-59-2 cis-1	,2-Dichlorocthene	ND (2.0) ND (0.5) 1 UJ

90)

ND

ND

ND



0.5

0.5

0.5

13)

2.7

ND

ND

ND

127-18-4 156-60-5

79-01-6

75-01-4

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

^{-;} Information not available or not applicable.

J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 01-Jun-16

Date Sampled: 5/30/2016

Date Received: 5/31/2016

Analysis Date: 5/31/2016

Analyst: DRS

TETRA TECH Client:

Project: Work Order No: 16051635

Sample Identification GRPCE-02-IA-

011A Lab Number:

Air, Can

Sample Type:

Test Method: EPA Method TO-15A

Initial Pressure:

-1.25 psig

Final Pressure: -1.25 psig

Canister ID:

CAS#	A	nalyte	Results (ug/m³)	RL (ug/m³)	Results (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene		ND	2.0	ND	(0.5)	1	UJ
127-18-4	Tetrachloroethene		(18)	3.4	(2.6)	0.5	1	
156-60-5	trans-1,2-Dichloroethene	24.00	ND	(2.0	ND	(0.5)	1	UJ
79-01-6	Trichloroethene		ND	2.7	ND	0.5	1	U
75-01-4	Vinyl Chloride		ND	1.3	ND	(0.5)	1	U



^{-,} Information not available or not applicable.

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Client:	TETRA TECH		
Project:		Work Order No:	16051635
Sample Identificati	on GRPCE-02-IA-	Date Sampled:	5/28/2016
Lab Number:	005A	Date Received:	5/31/2016
Sample Type:	Air, Can	Analysis Date:	5/31/2016
Test Method:	EPA Method TO-15A	Analyst:	DRS
Initial Pressure:	-1.61 psig		
Final Pressure:	-1.61 psig		
Canister ID:	14120		

CAS#		Analyte	Results (ug/m³)	RL (ug/m³)	Results (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene		ND	(2.0)	ND	0.5	1	UJ
127-18-4	Tetrachloroethene		(34)	3.4	(5.1)	0.5	1	
156-60-5	trans-1,2-Dichlorocthene		ND	(2.0	ND	(0.5)	1	US
79-01-6	Trichloroethcne		ND	2.7	ND	0.5	1	U
75-01-4	Vinyl Chloride		ND	1.3	ND	0.5	1	U



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 01-Jun-16

Client: TETRA TECH

Project: Work Order No: 16051635

Sample Identification GRPCE-02-IA- 2) Date Sampled: 5/28/2016

Lab Number: 006A Date Received: 5/31/2016

Sample Type: Air, Can Analysis Date: 5/31/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -1.17 psig
Final Pressure: -1.17 psig
Canister ID: 14462

CAS#	Analyte	Results (ug/m³)	RL (ug/m³)	Results (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	ND	(2.0	ND	0.5	1	UJ
127-18-4	Tetrachloroethene	32	3.4	(4.7)	0.5	1	
156-60-5	trans-1,2-Dichloroethene	ND	,20	ND	(0.5)	1	UJ
79-01-6	Trichloroethene	ND	127	ND	0.5	1	U
75-01-4	Vinyl Chloride	ND	13	ND	0.5	1	U



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



cis-1,2-Dichloroethene

trans-1,2-Dichloroethene

Tetrachloroethene

Trichloroethene

Vinyl Chloride

Date: 01-Jun-16

Client:	TETRA TECH		
Project:		Work Order No:	16051635
Sample Identificati	on GRPCE-02-OA-1	Date Sampled:	5/28/2016
Lab Number:	007A	Date Received:	5/31/2016
Sample Type:	Air, Can	Analysis Date:	5/31/2016
Test Method:	EPA Method TO-15A	Analyst:	DRS
Initial Pressure:	-1.2 psig		
Final Pressure:	-1.2 psig		
Canister ID:	14466		
		Results RL Results	RL



(ppbV)

0.5

0.5

0.5

0.5

Qual

I

UJ

CAS#

156-59-2

127-18-4

156-60-5

79-01-6

75-01-4

--; Information not available or not applicable.

Analyte

- ND; Less than the indicated limit of detection (LOD)
- RL: Report Limit
- J; Value is between the MDL and Reporting Limit, estimated r
- B; Analyte detected in the associated Method Blank
- S; Spike Recovery outside accepted recovery limits
- R; RPD outside accepted recovery limits

(ug/m³) (ug/m³)

ND

ND

ND

ND

ND

(pphV)

ND

ND

ND

ND

ND

2.0

3.4

2.0

2.7

1.3

- T; Tentatively Identified Compound (TIC)
- E; Value exceeds linear range of calibration curve



cis-1,2-Dichloroethene

trans-1,2-Dichloroethene

Tetrachloroethene

Trichloroethene Vinyl Chloride Date: 01-Jun-16

Client:	TETRA TECH		
Project:		Work Order No:	16051635
Sample Identificati	on GRPCE-03-IA-	Date Sampled:	5/30/2016
Lab Number:	012A	Date Received:	5/31/2016
Sample Type:	Air, Can	Analysis Date:	5/31/2016
Test Method:	EPA Method TO-15A	Analyst:	DRS
Initial Pressure:	-1.25 psig		
Final Pressure:	-1.25 psig		
Canister ID:	13989		
		Results RL Results	RL

(ug/m³)

(25)

ND

ND

ND

ND

(ug/m³)

2.0

20

2.7

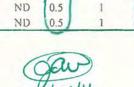
13

(ppbV)

(3.6)

ND (

ND

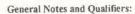


(ppbV)

0.5

0.5

DF



CAS#

156-59-2

127-18-4

156-60-5

79-01-6

75-01-4

Analyte

^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Vinyl Chloride

75-01-4

Date: 01-Jun-16

Client:		TETRA TECH		
Project:			Work Order No:	16051635
Sample Ide	entification	on GRPCE-03-IA-	Date Sampled:	5/30/2016
Lab Numbe	er:	013A	Date Received:	5/31/2016
Sample Typ	pe:	Air, Can	Analysis Date:	5/31/2016
Test Metho	od:	EPA Method TO-15A	Analyst:	DRS
Initial Pres	sure:	-1.28 psig		
Final Press	ure:	-1.28 psig		
Canister ID	D:	14001		
CAS#		Analyte	Results RL Results (ug/m³) (ug/m³) (ppbV)	RL (ppbV) DF Qual
156-59-2	cis-1,	2-Dichlorocthene	ND (2.0) ND	(0.5) 1 UJ
127-18-4	Tetra	chloroethene	37 34 (5.4)	05 1
156-60-5	trans-	-1,2-Dichloroethene	ND (2.0) ND	(05) 1 05
79-01-6	Trich	loroethene	ND 2.7 ND	0.5 1 0



ND

^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J: Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Client:

Canister ID:

TETRA TECH

14076

Date: 01-Jun-16

Project: Work Order No: 16051635 Sample Identification GRPCE-03-IA-Date Sampled: 5/30/2016

014A Lab Number: Date Received: 5/31/2016

Sample Type: Air, Can Analysis Date: 5/31/2016 Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -1.59 psig Final Pressure: -1.59 psig

CAS#	Analyte	Results (ug/m³)	RL (ug/m³)	Results (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	ND	(2.0) ND	0.5	1	UJ
127-18-4	Tetrachloroethene	(36)	3.4	(5.3)	0.5	1	
156-60-5	trans-1,2-Dichloroethene	ND	(2.0)	ND	0.5	1	UJ
79-01-6	Trichloroethene	ND	2.7	ND	0.5	1	U
75-01-4	Vinyl Chloride	ND	1.3	ND	0.5	1	U



- -; Information not available or not applicable.
- ND; Less than the indicated limit of detection (LOD)
- RL; Report Limit
- J; Value is between the MDL and Reporting Limit, estimated r T; Tentatively Identified Compound (TIC)
- B; Analyte detected in the associated Method Blank
- S; Spike Recovery outside accepted recovery limits
- R; RPD outside accepted recovery limits

 - E; Value exceeds linear range of calibration curve



cis-1,2-Dichloroethene

trans-1,2-Dichloroethene

Tetrachloroethene

Trichlorocthene

Vinyl Chloride

Date: 01-Jun-16

Client:	TETRA TECH		
Project:		Work Order No.	16051635
Sample Identificati	ion GRPCE-03-OA	Date Sampled	5/30/2016
Lab Number:	015A	Date Received	5/31/2016
Sample Type:	Air, Can	Analysis Date	: 6/1/2016
Test Method:	EPA Method TO-15A	Analyst	DRS
nitial Pressure:	-1.47 psig		
Final Pressure:	-1.47 psig		
Canister ID:	14478		
		Results RL Results	RL

 (ug/m^3)

ND

ND

ND

ND

ND

(ug/m³)

2.0

3.4

2.0

2.7

13

(ppbV)

ND

ND

ND

ND

ND



(ppbV)

0.5

0.5

0.5

0.5

0.5

Qual

CAS#

156-59-2

127-18-4 156-60-5

79-01-6

75-01-4

Analyte

^{-,} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve

Site Name	Grand Rapids VI ER	TDD No.	SOF 0001 160F 010
Document Tracking No.	0858C	TOD NO.	S05-0001-1605-010
Data Reviewer (signature and date)	Jeogca a. Vickers June 14, 2016	Technical Reviewer (signature and date)	Hang N. Ellis III 15 June 2016
Laboratory Report No.	16060144	Laboratory	Bureau Veritas/Novi, MI
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15	
Samples and Matrix	Eight air samples (including one field duplic	cate)	
Field Duplicate Pairs	GRPCE-04-IA- (1)/GRPCE-04-IA- (1)-DP	
Field Blanks	None		

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Y	
Initial Calibration:	
Within	Exceedance/Notes
Criteria	Executive y Notes
Υ	
Continuing Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Υ	
Calibration Verification:	
Within	Exceedance/Notes
Criteria	Exact durine, Notes
NA	
Method blanks:	
Within	Exceedance/Notes
Criteria	Endecadinely Notes
Υ	

Exceedance/Notes



Within

Criteria NA

Interference	Check Sam	ples (ICS)	(ICP	metals only	/):
--------------	-----------	------------	------	-------------	-----

Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within	Exceedance/Notes
Criteria	Exceedance/ Notes
NA	



	EFA REGION 5 START CONTRACT
Field duplicates:	
Within	Exceedance/Notes
Criteria	Execedance/Notes
Υ	
LCSs/LCSDs:	
Within	E In /No
Criteria	Exceedance/Notes
Υ	
Sample dilutions:	
Within	
Criteria	Exceedance/Notes
NA	
Re-extraction and reanalysis:	
Within Criteria	Exceedance/Notes
NA	
Second column confirmation (GC ar	d HPLC analyses only):
Within	Fuere device (Nietos
Criteria	Exceedance/Notes
NA	
Internal Standards:	
Within	E (No.
Criteria	Exceedance/Notes



Target analyte identification	Target	analy	vte i	iden	tifica	ition
-------------------------------	--------	-------	-------	------	--------	-------

Within Criteria	Exceedance/Notes
Υ	
nalyte qua	ntitation and MDLs/RLs:
Within	
Criteria	Exceedance/Notes

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

Other Labe	enyl.
Within	Evenedance/Notes
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.





Client:		TETRA TECH										
Project:									ler No:	1606014		
Sample Ide	ntificat	ion GRPCE-03-IA-	(B	ASEMENT)				Date Sa	mpled:	6/2/2016		
Lab Numb	er:	005A			Date Received:					6/2/2016		
Sample Ty	pe:	Air, Can			Analysis Date:			s Date:	6/3/2016			
Test Method:		EPA Method T	O-15A					A	nalyst:	DRS		
Initial Pressure:		-1.93 psig										
Final Press	ure:	-1.93 psig										
Canister II):	14292										
CAS#			Analyte		Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1	,2-Dichloroethene		9.00 1	ND	000	2.0	ND	0.04	0.5	1	U
127-18-4	Tetra	achloroethene			57	0.27	3.4	(8.4)	0.04	0.5	1	
156-60-5	trans	s-1,2-Dichloroethene			ND	0.16	(2.0	ND	0.04	(05)	1	U
79-01-6	Trick	hloroethene			0.21	0.21	2.7	0.040	0.04	0.5	1	J
75-01-4	Viny	d Chloride			ND	0.10	1.3	ND	0.04	(0.5)	1	1)



^{--;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

 $J_{\mbox{\tiny T}}$ Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Trichloroethene

Vinyl Chloride

Date: 03-Jun-16

Client:		TETRA TECH											
Project:					Wo			Vork Ord	ler No:	1606014			
Sample Iden	tification	n GRPCE-03-1A		(MAIN)					Date Sa	mpled:	6/2/2016		
Lab Number: 004A								Date Re	ceived:	6/2/2016			
Sample Type: Air, Can								Analysis	s Date:	6/3/2016			
Test Method: EPA Meth		EPA Method	TO-15A						A	nalyst:	DRS		
Initial Pressure: -2		-2.64 psig											
Final Pressu	re:	-2.64 psig											
Canister ID:		14037											
CAS#			Analyte			Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2		-Dichloroethene			h.,	ND					0.5	1	U
127-18-4 156-60-5		.2-Dichloroethene				16 ND	0.27	-	2.3 ND	0.04	0.5	1	U

ND

ND

0.21

0.10



ND 0.04

0.04

ND

79-01-6

75-01-4

^{--:} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



trans-1,2-Dichloroethene

Trichloroethene

Vinyl Chloride

156-60-5

79-01-6

75-01-4

Date: 03-Jun-16

Client:	TETRA TECH	
Project:		Work Order No: 16060144
Sample Identificat	ion GRPCE-03-IA-	Date Sampled: 6/2/2016
Lab Number:	007A	Date Received: 6/2/2016
Sample Type:	Air, Can	Analysis Date: 6/3/2016
Test Method:	EPA Method TO-15A	Analyst: DRS
Initial Pressure:	-2.04 psig	
Final Pressure:	-2.04 psig	
Canister ID:	14551	
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
	,2-Dichloroethene achloroethene	ND 0.16 (2.0 ND 0.04 0.5 1 U

ND

ND

0.21

0.16

0.21

0.10

ND

ND

2.7 (0.040)

0.04

0.04

0.04



0.5

^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Trichloroethene

Vinyl Chloride

Date: 03-Jun-16

Client:	TETRA TECH	
Project:		Work Order No: 16060144
Sample Identi	fication GRPCE-03-IA-	Date Sampled: 6/2/2016
Lab Number:	006A	Date Received: 6/2/2016
Sample Type:	Air, Can	Analysis Date: 6/3/2016
Test Method:	EPA Method TO-15A	Analyst: DRS
Initial Pressur	re: -2.48 psig	
Final Pressure	e: -2.48 psig	
Canister ID:	14619	
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.16 (2.0) ND 0.04 (0.5) 1 U
127-18-4 156-60-5	Tetrachlorocthene trans-1,2-Dichloroethene	ND 0.16 (2.0) ND 0.04 (0.5) 1 U

ND

ND

0.21

0.10

2.7

1.3



ND 0.04

0.04

ND

79-01-6

75-01-4

^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Vinyl Chloride

75-01-4

Date: 03-Jun-16

Client:		TETRA TECH	
Project:			Work Order No: 16060144
Sample Ide	ntificati	on GRPCE-04-1A-11)	Date Sampled: 6/2/2016
Lab Number:		001A	Date Received: 6/2/2016
Sample Type:		Air, Can	Analysis Date: 6/2/2016
Test Metho	od:	EPA Method TO-15A	Analyst: DRS
Initial Pres	sure:	-1.61 psig	
Final Press	sure:	-1.61 psig	
Canister II	D:	14289	
CAS#		Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,	2-Dichloroethene	ND 0.16 (2.0) ND 0.04 (0.5) 1 U
127-18-4	Tetra	chloroethene	23 0.27 3.4 3.5 0.04 0.5 1
156-60-5	trans	-1,2-Dichloroethene	ND 0.16 (2.0) ND 0.04 (0.5) 1 U
79-01-6	Trich	loroethene	ND 0.21 2.7 ND 0.04 0.5 1



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated \boldsymbol{r}

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 03-Jun-16

Client:	TETRA TECH	
Project:		Work Order No: 16060144
Sample Ide	entification GRPCE-04-IA-1)-DP	Date Sampled: 6/2/2016
Lab Numb	er: 002A	Date Received: 6/2/2016
Sample Type: Air, Can		Analysis Date: 6/2/2016
Test Method: EPA Method TO-15A		Analyst: DRS
Initial Pressure: -1.82 psig		
Final Press	sure: -1.82 psig	
Canister II	D: 14544	
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.16 (2.0) ND 0.04 (0.5) 1 U
127-18-4	Tetrachloroethcne	24 0.27 3.4 (3.5) 0.04 0.5 1
156-60-5	trans-1,2-Dichlorocthene	ND 0.16 (2.0) ND 0.04 (0.5) 1
79-01-6	Trichloroethene	ND 0.21 2.7 ND 0.04 0.5 1
75-01-4	Vinyl Chloride	ND 0.10 (1.3 ND 0.04 (0.5) 1



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Trichlorocthene

Vinyl Chloride

79-01-6

75-01-4

Date: 03-Jun-16

Client:		TETRA TECH										
Project:							1	Work Order No: 1606		1606014	4	
Sample Ide	ntificati	ion GRPCE-04-1A	2)					Date Sa	mpled:	6/2/2016		
Lab Number:		003A						Date Red	ceived:	6/2/2016		
Sample Type: Test Method:		Air, Can					Analysis	s Date:	6/2/2016			
		EPA Method	ГО-15А					A	nalyst:	DRS		
Initial Pressure:		-2.02 psig										
Final Press	nre:	-2.02 psig										
Canister ID):	14614										
CAS#			Analyte		Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1	,2-Dichloroethene			ND	0.16	2.0	ND	0.04	(0.5)	1	U
127-18-4 156-60-5		achloroethene s-1,2-Dichloroethene		4.40	ND ND	0.27	2.0	3.3 ND	0.04	0.5	1	V

ND

ND

0.21

0.10

2.7



0.5

0.04

0.04

ND

ND

^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 03-Jun-16

Project:				
		-	-	

Work Order No: 16060144

Sample Identification GRPCE-04-OA-

Date Sampled: 6/2/2016

Lab Number: 008A

Date Received: 6/2/2016

Sample Type: Air, Can

Analysis Date: 6/3/2016

Test Method: EPA Method TO-15A
Initial Pressure: -1.52 psig

Analyst: DRS

Final Pressure:

Client:

-1.52 psig -1.52 psig

TETRA TECH

Canister ID: 1

13994

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	ND	0.16	(2.0	ND	0.04	(0.5)	1	U
127-18-4	Tetrachloroethene	ND	0.27	3.4	ND	0.04	0.5	1	1
156-60-5	trans-1,2-Dichloroethene	ND	0.16	2.0	ND	0.04	0.5	1	
79-01-6	Trichloroethene	ND	0.21	2.7	ND	0.04	0.5	1	
75-01-4	Vinyl Chloride	ND	0.10	1.3	ND	0.04	05	1	V



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated \boldsymbol{r}

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve

Site Name	Grand Rapids VI ER	TDD No.	S05-0001-1605-010
Document Tracking No.	0858D	וטט וויס.	202-0001-1602-010
Data Reviewer (signature and date)	Jeoaca a. Vickers June 14, 2016	Technical Reviewer (signature and date)	Hang N. Elis III 15 June 2016
Laboratory Report No.	16060309	Laboratory	Bureau Veritas/Novi, MI
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15	
Samples and Matrix	Eight air samples (including one field duplic	cate)	
Field Duplicate Pairs	GRPCE-04-IA-GRPCE-04-	IA- DP	
Field Blanks	None		

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Ī	Within Criteria	Exceedance/Notes
Ī	Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Y	
Initial Calibration:	
Within	Exceedance/Notes
Criteria	Executive y Notes
Υ	
Continuing Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Υ	
Calibration Verification:	
Within	Exceedance/Notes
Criteria	Exact durine, Notes
NA	
Method blanks:	
Within	Exceedance/Notes
Criteria	Endecadinely Notes
Υ	

Exceedance/Notes



Within

Criteria NA

Interference	Check Sam	ples (ICS)	(ICP	metals only	/):
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Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within	Exceedance/Notes
Criteria	Exceedance/ Notes
NA	



	EFA REGION 5 START CONTRACT
Field duplicates:	
Within	Exceedance/Notes
Criteria	Execedance/Notes
Υ	
LCSs/LCSDs:	
Within	E In /No
Criteria	Exceedance/Notes
Υ	
Sample dilutions:	
Within	
Criteria	Exceedance/Notes
NA	
Re-extraction and reanalysis:	
Within Criteria	Exceedance/Notes
NA	
Second column confirmation (GC ar	d HPLC analyses only):
Within	Fuere device (Nietos
Criteria	Exceedance/Notes
NA	
Internal Standards:	
Within	E (No.
Criteria	Exceedance/Notes



Target analyte identification	Target	analy	vte i	iden	tifica	ition
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Within Criteria	Exceedance/Notes
Υ	
nalyte qua	ntitation and MDLs/RLs:
Within	
Criteria	Exceedance/Notes

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

Other Labe	openyj.		
Within	Evenedance/Notes		
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.





Sample Identification GRPCE-04-IA-

TETRA TECH

14291

Client:

Canister ID:

Date: 06-Jun-16

Project: Work Order No: 16060309

(BASEMENT) Date Sampled: 6/3/2016

Lab Number: 004A Date Received: 6/3/2016

Sample Type: Air, Can Analysis Date: 6/3/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -1.09 psig
Final Pressure: -1.09 psig

RL Results MDL RL Results MDL (ppbV) (ug/m³) (ug/m³) CAS# (ug/m³) (ppbV) (ppbV) Analyte DF Qual U

ND (2.0 cis-1,2-Dichloroethenc 0.04 156-59-2 ND 0.16 0.5 127-18-4 Tetrachloroethene 69 0.27 3.4 10 0.04 156-60-5 trans-1,2-Dichloroethene ND 0.16 2.0 ND 0.045 U 0.060 0.04 79-01-6 Trichloroethene 0.32 0.21 75-01-4 Vinyl Chloride ND 0.10 ND



^{-;} Information not available or not applicable.

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 06-Jun-16

Client: TETRA TECH

Project: Work Order No: 16060309

Sample Identification GRPCE-04-IA (MAIN) Date Sampled: 6/3/2016

Lab Number: 003A Date Received: 6/3/2016

Sample Type: Air, Can Analysis Date: 6/3/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -2.4 psig

Final Pressure: -2.4 psig

Canister ID: 13940 MDL RL Results MDL RL Results CAS# (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) Analyte

DF Qual cis-1,2-Dichloroethene 0.24 0.060 0.04 0.5 1 J 156-59-2 0.16 2.0 127-18-4 Tetrachloroethene 12 0.27 3.4 0.04 0.5 156-60-5 trans-1,2-Dichloroethene ND 0.16 ND 0.04 0.5 2.7 ND 0.04 0.5 79-01-6 Trichlorocthene ND 0.21 ND 0.04 75-01-4 Vinyl Chloride ND 0.10 1.3



J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 06-Jun-16

Client:	TETRA TECH		
Project:		Work Order No:	16060309
Sample Identificat	ion GRPCE-04-IA-	Date Sampled:	6/3/2016
Lab Number:	005A	Date Received:	6/3/2016
Sample Type:	Air, Can	Analysis Date:	6/3/2016
Test Method:	EPA Method TO-15A	Analyst:	DRS
Initial Pressure:	-0.4 psig		
Final Pressure:	-0.4 psig		
Canister ID:	14612		

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual	
156-59-2	cis-1,2-Dichloroethene	ND	0.16	(2,0	ND	0.04	0.5	I	U	
127-18-4	Tetrachloroethene	(53)	0.27	3.4	7.8	0.04	0.5	1	7	MIL
156-60-5	trans-1,2-Dichloroethene	ND	0.16	(2.0	ND	0.04	(0.5)	1	U	July 1
79-01-6	Trichloroethene	1.27	0.21	2.7	0.050	0.04	0.5	1	J	06/14/
75-01-4	Vinyl Chloride	ND	0.10	(1.3	ND	0.04	(05)	1	U	



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 06-Jun-16

Client: TETRA TECH

Final Pressure:

Project: Work Order No: 16060309

Sample Identification GRPCE-04-IA-Date Sampled: 6/3/2016

Lab Number: 006A

Date Received: 6/3/2016 Sample Type: Air, Can Analysis Date: 6/3/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -1.89 psig

-1.89 psig Canister ID: 13999

CAS#		Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene		ND	0.16	(2.0	ND	0.04	(0.5)	1	U
127-18-4	Tetrachloroethene		(40)	0.27	3.4	(3.9)	0.04	0.5	1	5
156-60-5	trans-1,2-Dichloroethene		ND	0.16	2.0	ND	0.04	0.5	1	U
79-01-6	Trichloroethene		(0.27)	0.21	2.7	0.050	0.04	0.5	1	1
75-01-4	Vinyl Chloride		ND	0.10	1.3	ND	0.04	0.5	1	U



J; Value is between the MDL and Reporting Limit, estimated r

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 06-Jun-16

Client: TETRA TECH

Final Pressure:

Project: Work Order No: 16060309

Sample Identification GRPCE-04-IA-Date Sampled: 6/3/2016

Lab Number: 007A Date Received: 6/3/2016

Sample Type: Air, Can Analysis Date: 6/4/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -2.3 psig

Canister ID: 14463

-2.3 psig

CAS#		Analyte		Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene			ND	0.16	(2.0	ND	0.04	(0.5)	1	U
127-18-4	Tetrachloroethene		*	(12)	0.27	3.4	(1.8)	0.04	0.5	1	
156-60-5	trans-1,2-Dichloroethene			ND	0.16	2.0	ND	0.04	0.5	1	U
79-01-6	Trichloroethene			ND	0.21	2.7	ND	0.04	0.5	1	
75-01-4	Vinyl Chloride			ND	0.10	1.3	ND	0.04	0.5	1	V



^{-;} Information not available or not applicable.

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 06-Jun-16

Client: TETRA TECH

Project: Work Order No: 16060309

Sample Identification GRPCE-05-IA- (1) Date Sampled: 6/3/2016

Lab Number: 001A

01A Date Received: 6/3/2016

Sample Type: Air, Can

r, Can Analysis Date: 6/3/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-1.67 psig

Final Pressure:

-1.67 psig

Canister ID:

14581

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	ND	0.16	(2.0)	ND	0.04	(0.5)	1	U
127-18-4	Tetrachloroethene	(16)	0.27	3.4	(2.4)	0.04	0.5	1	
156-60-5	trans-1,2-Dichloroethene	ND	0.16	2.0	ND	0.04	0.5	1	U
79-01-6	Trichloroethene	ND	0.21	2.7	ND	0.04	0.5	1	1
75-01-4	Vinyl Chloride	ND	0.10	1.3	ND	0.04	0.5	1	V



J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 06-Jun-16

Client: TETRA TECH

Project: Work Order No: 16060309

Sample Identification GRPCE-05-IA- (2) Date Sampled: 6/3/2016

Lab Number: 002A Date Received: 6/3/2016

Sample Type: Air, Can Analysis Date: 6/3/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -1.93 psig
Final Pressure: -1.93 psig

Canister ID: 14613

CAS#		Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene		ND	0.16	(2.0	ND	0.04	(0.5)	1	U
127-18-4	Tetrachloroethene		(25)	0.27	3.4	(3.7)	0.04	0.5	1	
156-60-5	trans-1,2-Dichloroethene		ND	0.16	2.0	ND	0.04	0.5	1	U
79-01-6	Trichloroethene		ND	0.21	2.7	ND	0.04	0.5	1	1
75-01-4	Vinyl Chloride		ND	0.10	1.3	ND	0.04	0.5	1	V



^{-;} Information not available or not applicable.

J; Value is between the MDL and Reporting Limit, estimated \boldsymbol{r}

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 06-Jun-16

Client:	TETRA TECH								
Project:				,	Work Or	der No:	1606030	9	
Sample Identificat	ion GRPCE-05-OA-				Date Sa	ampled:	6/3/2016		
Lab Number:	008A				Date Re	eceived:	6/3/2016		
Sample Type:	Air, Can				Analys	is Date:	6/4/2016		
Test Method:	EPA Method TO-15A				A	Analyst:	DRS		
Initial Pressure:	-3.29 psig								
Final Pressure:	-3.29 psig								
Canister ID:	14476								
CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	ND	0.16	(20) ND	0.04	(0.5)	1	U
127-18-4	Tetrachloroethene	0.34	0.27	3.4	0.050	0.04	0.5	1	J
156-60-5	trans-1,2-Dichloroethene	ND	0.16	2.0	ND	0.04	0.5	1	U
79-01-6	Trichloroethene	ND	0.21	2.7	ND	0.04	0.5	1	1
75-01-4	Vinyl Chloride	ND	0.10	1.3	ND	0.04	0.5	1	4



ND; Less than the indicated limit of detection (LOD)

RL: Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

^{-;} Information not available or not applicable.

Site Name	Grand Rapids VI ER		TDD No.	S05-0001-1605-010
Document Tracking No.	0858E		וטט ווט.	303-0001-1603-010
Data Reviewer (signature and date)	Jeoaca a. Vickers June 15, 2016		Technical Reviewer (signature and date)	Hang N. Elis III 15 June 2016
Laboratory Report No.	16060334		Laboratory	Bureau Veritas/Novi, MI
Analyses	Volatile organic compounds (VOCs) by EPA	М	ethod TO-15	
Samples and Matrix	Seven air samples			
Field Duplicate Pairs	None			
Field Blanks	None			

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection of results was required for this data set. The data is usable as qualified.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrument Performance Checks:

Within Criteria	Exceedance/Notes
Υ	

Initial Calibration:

Within Criteria	Exceedance/Notes
Y	

Continuing Calibration:

Within Criteria	Exceedance/Notes
N	The percent differences for cis-1,2-dichloroethene and trans-1,2-dichloroethene exceeded the acceptance criteria. The associated results were qualified as estimated (J/UJ).

Calibration Verification:

Within Criteria	Exceedance/Notes
NA	

Method blanks:

Within Criteria	Exceedance/Notes
Υ	

Field blanks:

Within Criteria	Exceedance/Notes
NA	



Interference	Check Sam	ples (ICS)	(ICP	metals only	/):
--------------	-----------	------------	------	-------------	-----

Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within	Exceedance/Notes
Criteria	Exceedance/ Notes
NA	



	EFA REGION 5 START CONTRACT
Field duplicates:	
Within	Exceedance/Notes
Criteria	Executance/ Notes
NA	
LCSs/LCSDs:	
Within	
Criteria	Exceedance/Notes
Υ	
Sample dilutions:	
Within	Formandames (Notes
Criteria	Exceedance/Notes
NA	
Re-extraction and reanalysis:	
Within	Exceedance/Notes
Criteria	Exceedance/Notes
NA	
Second column confirmation (GC and I	IPLC analyses only):
Within	Fysoodones/Notes
Criteria	Exceedance/Notes
NA	
Internal Standards:	
Within	Exceedance/Notes
Criteria	·



Target analyte identification	Target	analy	vte i	iden	tifica	ition
-------------------------------	--------	-------	-------	------	--------	-------

Within Criteria	Exceedance/Notes
Υ	
nalyte qua	ntitation and MDLs/RLs:
Within	
Criteria	Exceedance/Notes

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

Other Labe	enyl.
Within	Evenedance/Notes
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.





Date: 07-Jun-16

Client:		TETRA TECH									
Project:							Work Ord	1606033			
Sample Ide	ntificatio	n GRPCE-05-IA	(BASEM)	ENT)			Date Sai	mpled:	6/6/2016		
Lab Number: 004A						Date Ree	eived:	6/6/2016			
Sample Typ	oe:	Air, Can					Analysis	Date:	6/6/2016		
Test Metho	d:	EPA Method To	O-15A				A	nalyst:	DRS		
Initial Pressure:		-0.73 psig									
Final Press	ure:	-0.73 psig									
Canister ID:		14159									
CAS#			Analyte	Results (ug/m³)	MD1. (ug/m³)	RL (ng/m³)	Results (ppbV)	MDL (ppbV)	RI. (ppbV)	DF	Qual
156-59-2	cis-1,2	2-Dichloroethene		NI	0.16	0.16	ND	0.04	(0.04)	1	UJ
127-18-4	Tetrac	chloroethene		63	0.27	0.27	9.3	0.04	0.04	1	
156-60-5	trans-	1,2-Dichloroethenc		NE	0.16	0.16	ND	0.04	0.04	1	UJ
79-01-6	Trichl	oroethene		0.21	0.21	0.21	0.040	0.04	0.04	1	
75-01-4	Vinyl	Chloride		NI	0.10	0.10) ND	0.04	(0.04)	-1	U



General Notes and Qualifiers:

-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Vinyl Chloride

75-01-4

Client: TETRA TECH Work Order No: 16060334 Project: Sample Identification GRPCE-05-1A-Date Sampled: 6/6/2016 (MAIN) 003A Date Received: 6/6/2016 Lab Number: Sample Type: Analysis Date: 6/6/2016 Air, Can EPA Method TO-15A Analyst: DRS Test Method: Initial Pressure: -0.74 psig -0.74 psig Final Pressure: Canister ID: 13964 RI. Results MDL RL Results MDL. CAS# (ug/m3) (ug/m3) (ug/m3) (ppbV) (pphV) (ppbV) DF Qual Analyte 0 16 0.04 156-59-2 cis-1,2-Dichloroethene 0.16 ND 0.04 127-18-4 Tetrachloroethene (12) 0.27 0.27 0.04 0.04 UJ 156-60-5 trans-1.2-Dichloroethene ND 0.16 0.16 ND 0.04 0.04 1 0.21 0.21 ND 0.04 0.04 79-01-6 Trichloroethene ND



0.04

Date: 07-Jun-16

0.10

ND

0.10

ND

0.04

^{--;} Information not available or not applicable.

ND: Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S, Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 07-Jun-16

Client:	TETRA TECH				
Project:		Work Order No: 1	16060334		
Sample Ide	ntification GRPCE-05-IA	Date Sampled: 6	/6/2016		
Lab Numbe	er: 005A	Date Received: 6	/6/2016		
Sample Typ	e: Air, Can	Analysis Date: 6	6/6/2016		
Test Metho	d: EPA Method TO-15A	Analyst: E	ORS		
Initial Pres	sure: -1.56 psig				
Final Press	ure: -1.56 psig				
Canister II	: 14078				
CAS#	Analyte	Results MDL RL Results MDL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV)	RL (ppbV) DF Qual		
156-59-2	cis-1,2-Dichloroethene	ND 0.16 (0.16) ND 0.04 (0.04) 1 UJ		
127-18-4	Tetrachloroethene	41 0.27 0.27 6.0 0.04	0.04		
156-60-5	trans-1,2-Dichloroethene	ND 0.16 0.16 ND 0.04	(0.04) 1 UJ		
79-01-6 Trichloroethene		ND 0.21 0.21 ND 0.04	0.04) 1 0		
75-01-4	Vinyl Chloride	ND 0.10 0.10 ND 0.04	0.04 1 U		



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 07-Jun-16

Client:	TETRA	TECH											
Project:						Work Order No:					16060334		
Sample Idea	ntification GRP	CE-05-IA-1168	(MAIN					Date Sai	npled:	6/6/2016			
Lab Numbe	r: 006A							Date Rec	eived:	6/6/2016			
Sample Typ	e: Air, (Can			Analysis Date:				Date:	6/6/2016			
Test Metho	d: EPA	Method TO-15A	1					A	nalyst:	DRS			
Initial Press	sure: -3.54	psig											
Final Pressi	ure: -3.54	psig											
Canister ID	: 13980	6											
CAS#		Anal	lyte		Results (ug/m³)	MDL (ug/m³)	RI. (ug/m³)	Results (ppbV)	MDI. (ppbV)	RL (ppbV)	DF	Qual	
156-59-2	cis-1,2-Dichlor	oethene			0.16	0.16	0.16	(0.040)	0.04	0.04	1	J	
127-18-4	Tetrachloroethe	ene	100	1	11	0.27	0.27	1.6	0.04	0.04	1		
156-60-5	trans-1,2-Dichl	oroethene			ND	0.16	0.16	ND	0.04	0.04	1	NJ	
79-01-6 Trichloroethene				ND	0.21	0.21	ND	0.04	0.04	1	U		
75-01-4	Vinyl Chloride				ND	0.10	0.10	ND	0.04	0.04	-1	U	



General Notes and Qualifiers:

-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

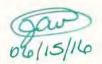
R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Date: 07-Jun-16

Client:	TETRA TECH	
Project:		Work Order No: 16060334
Sample Ide	ntification GRPCE-06-IA-	Date Sampled: 6/6/2016
Lab Numbe	er: 001A	Date Received: 6/6/2016
Sample Typ	e: Air, Can	Analysis Date: 6/6/2016
Test Metho	d: EPA Method TO-15A	Analyst: DRS
Initial Press	sure: -1.37 psig	
Final Press	ure: -1.37 psig	
Canister ID	14315	
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m²) (ug/m²) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.16 (1.16) ND 0.04 (0.04) 1 UJ
127-18-4	Tetrachloroethene	0.8 0.27 0.27 (1.5) 0.04 0.04 1
156-60-5	trans-1,2-Dichloroethene	ND 0.16 0.16 ND 0.04 0.04 1 UJ
79-01-6	Trichloroethene	ND 0.21 0.21 ND 0.04 0.04 1 U
75-01-4	Vinyl Chloride	ND 0.10 0.10 ND 0.04 0.04 1



-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Trichloroethene

Vinyl Chloride

Date: 07-Jun-16

Project: Sample Identification GRPCE-06IA-1170 (2) Lab Number: 002A Date Received: 6/6/2016 Sample Type: Air, Can Test Method: EPA Method TO-15A Initial Pressure: -2.18 psig Canister ID: 14026		-
Lab Number: 002A Date Received: 6/6/2016 Sample Type: Air, Can Analysis Date: 6/6/2016 Test Method: EPA Method TO-15A Analyst: DRS Initial Pressure: -2.18 psig Final Pressure: -2.18 psig	,	
Sample Type: Air, Can Analysis Date: 6/6/2016 Test Method: EPA Method TO-15A Analyst: DRS Initial Pressure: -2.18 psig Final Pressure: -2.18 psig		
Test Method: EPA Method TO-15A Analyst: DRS Initial Pressure: -2.18 psig Final Pressure: -2.18 psig	5	
Initial Pressure: -2.18 psig Final Pressure: -2.18 psig	6	
Final Pressure: -2.18 psig		
Final Pressure: -2.18 psig		
Canister ID: 14026		
5.11.01.11.11.11.11.11.11.11.11.11.11.11.		
Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (pphV) (ppbV) (ppbV)	DF C	Qual
156-59-2 cis-1,2-Dichloroethene ND 0.16 (6.16 ND 0.04 (0.04)	1 (U
127-18-4 Tetrachloroethene 35 0.27 0.27 5.1 0.04 0.04 156-60-5 trans-1,2-Dichloroethene ND 0.16 0.16 ND 0.04 0.04	1	ノゴ

ND

ND

0.21

0.10

0.21

0.10

ND 0.04

ND 0.04



0.04

0.04

79-01-6

75-01-4

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J: Value is between the MDL and Reporting Limit, estimated r

MDL: Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R: RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

^{-:} Information not available or not applicable.



Date: 07-Jun-16

Client:	TETRA TECH	
Project:		Work Order No: 16060334
Sample Idea	ntification GRPCE-06-OA-	Date Sampled: 6/6/2016
Lab Numbe	r: 007A	Date Received: 6/6/2016
Sample Typ	e: Air, Can	Analysis Date: 6/6/2016
Test Metho	d: EPA Method TO-15A	Analyst: DRS
Initial Press	sure: -1.39 psig	
Final Pressi	ıre: -1.39 psig	
Canister 1D	: 13969	
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qua
156-59-2	cis-1,2-Dichloroethene	ND 0.16 (016) ND 0.04 (004) 1 US
127-18-4	Tetrachloroethene	ND 0.27 0.27 ND 0.04 0.04 1
156-60-5	trans-1,2-Dichloroethene	ND 0.16 0.16 ND 0.04 0.04 1 U
79-01-6	Trichloroethene	ND 0.21 0.21 ND 0.04 0.04 1 U
75-01-4	Vinyl Chloride	ND 0.10 010 ND 0.04 0 04 1 U



^{-;} Information not available or not applicable.

ND: Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r T; Tentatively Identified Compound (TIC)

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

E; Value exceeds linear range of calibration curve



June 16, 2016

Betsy Nightingale On-Scene Coordinator U.S. Environmental Protection Agency Region 5 9311 Groh Road Grosse Ile, MI 48138-1697

Subject: Data Validation Report

Grand Rapids VI ER

EPA Contract No. EP-S5-13-01

Technical Direction Document No. S05-0001-1605-010

Document Tracking No. 0869

Dear Ms. Nightingale:

Tetra Tech Inc. (Tetra Tech) is submitting this Data Validation Report for eight air samples collected at the Grand Rapids VI ER site. The samples were collected June 8 and 9, 2016 and were analyzed for volatile organic compounds by Bureau Veritas Laboratories. Tetra Tech received the final data on June 15, 2016.

Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines* (NFG) for Superfund Organic Methods Data Review (August 2014).

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

If you have any questions regarding this Data Validation Report, please call me at (662) 681-5727.

Sincerely,

Jessica A. Vickers START Chemist

Enclosure

cc: Kevin Scott, Tetra Tech Program Manager

Michael Browning, Tetra Tech Project Manager

TDD File

Jesaca a Vickers

ATTACHMENT 1 DATA VALIDATION REPORT SDG 16060658

Site Name	Grand Rapids VI ER	TDD No.	505 0001 1605 010	
Document Tracking No.	0869	TDD No.	S05-0001-1605-010	
Data Reviewer (signature and date)	Jeoaca a. Vickers June 16, 2016	Technical Reviewer (signature and date)		
Laboratory Report No.	16060658	Laboratory	Bureau Veritas/Novi, MI	
Analyses	Volatile organic compounds (VOCs) by EPA Method TO-15			
Samples and Matrix	Eight air samples			
Field Duplicate Pairs	None			
Field Blanks	None	_		

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Y	
Initial Calibration:	
Within	Exceedance/Notes
Criteria	Executive y Notes
Υ	
Continuing Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Υ	
Calibration Verification:	
Within	Exceedance/Notes
Criteria	Exact durine, Notes
NA	
Method blanks:	
Within	Exceedance/Notes
Criteria	Endecadinely Notes
Υ	

Exceedance/Notes



Within

Criteria NA

Interference	Check Sam	ples (ICS)	(ICP	metals only	/):
--------------	-----------	------------	------	-------------	-----

Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within	Exceedance/Notes
Criteria	
NA	



	EFA REGION 5 START CONTRACT
Field duplicates:	
Within	Exceedance/Notes
Criteria	Executance/ Notes
NA	
LCSs/LCSDs:	
Within	- 4
Criteria	Exceedance/Notes
Υ	
Sample dilutions:	
Within	Formandon on / Notice
Criteria	Exceedance/Notes
NA	
Re-extraction and reanalysis:	
Within	Exceedance/Notes
Criteria	Exceedance/Notes
NA	
Second column confirmation (GC and I	IPLC analyses only):
Within	Fysoodones/Notes
Criteria	Exceedance/Notes
NA	
Internal Standards:	
Within	Exceedance/Notes
Criteria	·



Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Y	Note: It appears that the RLs and MDLs were transposed on the results summary pages attached. The appropriate value to be used for non-detects were indicated in the attachment.

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Y	

Other [specify]:

C tile: [cpc	~~1F
Within	Exceedance/Notes
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.





Date: 13-Jun-16

Client: TETRA TECH

Project: Grand Rapids site Work Order No: 16060658

Sample Identification GRPCE-06-IA- (BASEMENT) Date Sampled: 6/8/2016

Lab Number: 004A

04A Date Received: 6/10/2016

Sample Type: Air, Can

ir, Can Analysis Date: 6/13/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -1.54

Final Pressure: -1.54

Canister ID: 14208

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	ND	(2.0	0.16	ND	(0.5)	0.04	1	U
127-18-4	Tetrachloroethene	(58)	3.4	0.27	(8.6)	0.5	0.04	1	
156-60-5	trans-1,2-Dichloroethene	ND	(2.0	0.16	ND	(0.5)	0.04	1	U
79-01-6	Trichloroethene	1.3	0.21	0.21	(0.24)	0.04	0.04	1	
75-01-4	Vinyl Chloride	ND	1.3	0.10	ND	(0.5)	0.04	1	U



^{-;} Information not available or not applicable.

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Vinyl Chloride

Date: 13-Jun-16

Client:	TETRA TECH	
Project:	Grand Rapids site	Work Order No: 16060658
Sample Iden	ntification GRPCE-06-IA-	Date Sampled: 6/8/2016
Lab Number: 003A		Date Received: 6/10/2016
Sample Typ	e: Air, Can	Analysis Date: 6/10/2016
Test Method	d: EPA Method TO-15A	Analyst: DRS
Initial Press	sure: -1.65	
Final Pressu	re: -1.65	
Canister ID	: 14631	
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND (2.0) 0.16 ND (0.5) 0.04 1 U
127-18-4	Tetrachloroethene	3.4 0.27 (1.9) 0.5 0.04
156-60-5	trans-1,2-Dichloroethene	ND (2.0) 0.16 ND (0.5) 0.04 1
79-01-6	Trichloroethene	ND 2.7 0.21 ND 0.5 0.04 1 ,

ND

1.3

0.10

ND

0.5



75-01-4

^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S: Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 13-Jun-16

Client:

TETRA TECH

Project:

Grand Rapids site

Work Order No: 16060658

Sample Identification GRPCE-06-IA-

Date Sampled: 6/8/2016

Lab Number: Sample Type: 005A Air, Can Date Received: 6/10/2016

Test Method:

EPA Method TO-15A

Analysis Date: 6/13/2016 Analyst: DRS

Initial Pressure:

-1.63

Final Pressure:

-1.63

Canister ID:

14616

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	ND	(20	0 16	ND	(0.5)	0.04	1	U
127-18-4	Tetrachloroethene	35	3.4	0.27	(5.2)	0.5	0.04	1	
156-60-5	trans-1,2-Dichloroethene	ND	2.0	0.16	ND	(0.5)	0.04	1	U
79-01-6	Trichloroethene	0.81	0.21	0.21	(0.15)	0.04	0.04	1	
75-01-4	Vinyl Chloride	ND	1.3	0.10	ND	0.5	0.04	1	V



-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Sample Identification GRPCE-06-IA-

Date: 13-Jun-16

Client:

TETRA TECH

Project:

Grand Rapids site

Work Order No: 16060658

Lab Number:

006A

Date Sampled: 6/8/2016

Date Received: 6/10/2016

Sample Type:

Air, Can

Test Method:

EPA Method TO-15A

Analysis Date: 6/13/2016 Analyst: DRS

Initial Pressure:

Final Pressure:

-0.55 -0.55

Canister ID:

14552

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	ND	(2.0	0.16	ND	(0.5)	0.04	1	U
127-18-4	Tetrachloroethene	(7.9)	3.4		(1.2)	0.5	0.04	1	
156-60-5	trans-1,2-Dichloroethene	ND	2.0	0.16	ND	(0.5)	0.04	t	U
79-01-6	Trichloroethene	ND	2.7	0.21	ND	0.5	0.04	1	.1,
75-01-4	Vinyl Chloride	ND	(1.3	0.10	ND	(0.5)	0.04	1	V



J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 13-Jun-16

Date Received: 6/10/2016

Client: TETRA TECH

Project: Grand Rapids site Work Order No: 16060658

Sample Identification GRPCE-07-IA-Date Sampled: 6/8/2016

Lab Number: 001A

> Air, Can Analysis Date: 6/10/2016

Sample Type:

Test Method: EPA Method TO-15A Analyst: DRS Initial Pressure: -1.38

Final Pressure: -1.38 Canister ID: 14179

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	ND	(2.0	0.16	ND	(0.5)	0.04	1	()
127-18-4	Tetrachloroethene	8.9	3.4	0.27	(1.3)	0.5	0.04	1	
156-60-5	trans-1,2-Dichloroethene	ND	2.0	0.16	ND	0.5	0.04	1	U
79-01-6	Trichloroethene	ND	2.7	0.21	ND	0.5	0.04	1	
75-01-4	Vinyl Chloride	ND	1.3	0.10	ND	0.5	0.04	1	V



-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S: Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Date: 13-Jun-16

Client: **TETRA TECH**

Project: Work Order No: 16060658 Grand Rapids site

Sample Identification GRPCE-07-IA-

Date Sampled: 6/8/2016

Lab Number: 002A Date Received: 6/10/2016

Sample Type: Air, Can

Test Method: EPA Method TO-15A Analysis Date: 6/10/2016 Analyst: DRS

Initial Pressure:

Final Pressure:

-2.12

Canister ID:

14468

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	ND	(2.0	0.16	ND	(0.5)	0.04	1	U
127-18-4	Tetrachloroethene	(19)	3.4	0.27	2.7	0.5	0.04	1	
156-60-5	trans-1,2-Dichloroethene	ND	2.0	0.16	ND	0.5	0.04	1	U
79-01-6	Trichloroethene	ND	2.7	0.21	ND	0.5	0.04	1	1
75-01-4	Vinyl Chloride	ND	1.3	0.10	ND	0.5	0.04	1	V



^{--;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 13-Jun-16

Client: TETRA TECH

Project: Grand Rapids site Work Order No: 16060658

Sample Identification GRPCE-07-OA

Date Sampled: 6/8/2016

Lab Number: 007A Date Received: 6/10/2016

Sample Type: Air, Can Analysis Date: 6/13/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -0.99
Final Pressure: -0.99

Canister ID: 14587

								-	
CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	ND	(2.0	0.16	ND	0.5	0.04	1	U
127-18-4	Tetrachloroethene	ND	3.4	0.27	ND	0.5	0.04	1	1.
156-60-5	trans-1,2-Dichloroethene	ND	(2.0	0.16	ND	0.5	0.04	1	V
79-01-6	Trichloroethene	(0.27)	0.21	0.21	0.050	0.04	0.04	1	
75-01-4	Vinyl Chloride	ND	1.3	0.10	ND	0.5	0.04	1	U



^{-;} Information not available or not applicable.

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated \boldsymbol{r}

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 13-Jun-16

Client:

TETRA TECH

Project:

Grand Rapids site

Work Order No: 16060658

Date Sampled: 6/9/2016

Date Received: 6/10/2016

Analysis Date: 6/13/2016

Analyst: DRS

Sample Identification GRPCE-08-OA-

008A

Lab Number:

Air, Can

Sample Type:

Test Method:

EPA Method TO-15A

Initial Pressure:

-0.07 psig

Final Pressure:

-0.07 psig

Canister ID:

14588

CAS#	Analyte		MDL. ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qua
156-59-2	cis-1.2-Dichloroethene	ND	(2.0	0 16	ND	(0.5	0.04	1	U
127-18-4	Tetrachloroethene	ND	3.4	0 27	ND	0.5	0.04	1	
156-60-5	trans-1,2-Dichloroethene	ND	2.0	0.16	ND	0.5	0.04	1	1
79-01-6	Trichloroethene	ND	2.7	0.21	ND	0.5	0.04	1	1,
75-01-4	Vinyl Chloride	ND	13	0.10	ND	0.5	0.04	1	V



B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R: RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



June 22, 2016

Betsy Nightingale On-Scene Coordinator U.S. Environmental Protection Agency Region 5 9311 Groh Road Grosse Ile, MI 48138-1697

Subject: Data Validation Report

Grand Rapids VI ER

EPA Contract No. EP-S5-13-01

Technical Direction Document No. S05-0001-1605-010

Document Tracking No. 0879

Dear Ms. Nightingale:

Tetra Tech Inc. (Tetra Tech) is submitting this Data Validation Report for one air sample collected at the Grand Rapids VI ER site. The sample was collected June 13, 2016 and was analyzed for volatile organic compounds by Bureau Veritas Laboratories. Tetra Tech received the revised final data on June 21, 2016.

Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines* (NFG) for Superfund Organic Methods Data Review (August 2014).

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

If you have any questions regarding this Data Validation Report, please call me at (662) 681-5727.

Sincerely,

Jessica A. Vickers START Chemist

Enclosure

cc: Kevin Scott, Tetra Tech Program Manager

Michael Browning, Tetra Tech Project Manager

TDD File

Jesaca a Vickers

ATTACHMENT 1 DATA VALIDATION REPORT SDG 16060870

Site Name	Grand Rapids VI ER	TDD No.	S05-0001-1605-010					
Document Tracking No.	0879	TOD NO.	303-0001-1603-010					
Data Reviewer (signature and date)	Jesaca a. Vickers June 22, 2016	Technical Reviewer (signature and date)	Hang N. Elis III 22 June 2016					
Laboratory Report No.	16060870	Laboratory	Bureau Veritas/Novi, MI					
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15						
Samples and Matrix	One air sample							
Field Duplicate Pairs	None	None						
Field Blanks	None							

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

With Criter	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Y	
Initial Calibration:	
Within	Exceedance/Notes
Criteria	Executive y Notes
Υ	
Continuing Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Υ	
Calibration Verification:	
Within	Exceedance/Notes
Criteria	Exact durine, Notes
NA	
Method blanks:	
Within	Exceedance/Notes
Criteria	Endecadinely Notes
Υ	

Exceedance/Notes



Within

Criteria NA

Interference	Check Sam	ples (ICS)	(ICP	metals only	/):
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Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within	Exceedance/Notes
Criteria	Exceedance/ Notes
NA	



	EFA REGION 5 START CONTRACT
Field duplicates:	
Within	Exceedance/Notes
Criteria	Executance/ Notes
NA	
LCSs/LCSDs:	
Within	- 4
Criteria	Exceedance/Notes
Υ	
Sample dilutions:	
Within	Formandon on / Notice
Criteria	Exceedance/Notes
NA	
Re-extraction and reanalysis:	
Within	Exceedance/Notes
Criteria	Exceedance/Notes
NA	
Second column confirmation (GC and I	IPLC analyses only):
Within	Fysoodones/Notes
Criteria	Exceedance/Notes
NA	
Internal Standards:	
Within	Exceedance/Notes
Criteria	·



Target analyte identification	Target	analy	vte i	iden	tifica	ition
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Within Criteria	Exceedance/Notes
Υ	
nalyte qua	ntitation and MDLs/RLs:
Within	
Criteria	Exceedance/Notes

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

Other Labe	enyl.
Within	Evenedance/Notes
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.





Date: 21-Jun-16

Work Order No: 16060870

Date Sampled: 6/13/2016

Date Received: 6/15/2016

Analysis Date: 6/15/2016

Client:	TETRA TECH			
Project:	Madison Heights			

Sample Identification GRPCE-09-OA

Lab Number:

001A

Sample Type:

Air, Can

Test Method: Initial Pressure: Final Pressure:		EPA Method	TO-15A				A	nalyst:	DRS		
		-2.22 psig									
		-2.22 psig									
Canister 1D):	14136									
CAS#			Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,	2-Dichloroethene		0.040	0.024	0.16	0.010	0.0061	0.04	1	J
127-18-4	Tetrac	chloroethene		0.14	0.036	0.27	0.020	0.0053	0.04	1	J
156-60-5	trans-	1,2-Dichloroethen	e	0.040	0.019	0.16	0.010	0.0049	0.04	1	J
79-01-6	Trichl	oroethene		0.11	0.021	0.21	0.020	0.0039	0.04	1	J
75-01-4	Vinyl	Chloride		ND	0.022	(0.10)) ND	0.0088	0 04	1	U



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



June 27, 2016

Betsy Nightingale On-Scene Coordinator U.S. Environmental Protection Agency Region 5 9311 Groh Road Grosse Ile, MI 48138-1697

Subject: Data Validation Report

Grand Rapids VI ER

EPA Contract No. EP-S5-13-01

Technical Direction Document No. S05-0001-1605-010

Document Tracking No. 0906

Dear Ms. Nightingale:

Tetra Tech Inc. (Tetra Tech) is submitting this Data Validation Report for seven air samples collected at the Grand Rapids VI ER site. The samples were collected June 19, 2016 and were analyzed for volatile organic compounds by Bureau Veritas Laboratories. Tetra Tech received the final data on June 24, 2016.

Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines* (NFG) for Superfund Organic Methods Data Review (August 2014).

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

If you have any questions regarding this Data Validation Report, please call me at (662) 681-5727.

Sincerely,

Jessica A. Vickers START Chemist

Enclosure

cc: Kevin Scott, Tetra Tech Program Manager

Michael Browning, Tetra Tech Project Manager

TDD File

Jesaca a Vickers

ATTACHMENT 1 DATA VALIDATION REPORT SDG 16061185

Site Name	Grand Rapids VI ER	TDD No.	SOF 0001 160F 010	
Document Tracking No.	0906	וטט ואס.	S05-0001-1605-010	
Data Reviewer (signature and date)	Jesaca a. Vickers June 27, 2016	Technical Reviewer (signature and date)	Hang N. Elis = 27 June 2016	
Laboratory Report No.	16061185	Laboratory	Bureau Veritas/Novi, MI	
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15		
Samples and Matrix	Seven air samples			
Field Duplicate Pairs	None			
Field Blanks	None			

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Y	
Initial Calibration:	
Within	Exceedance/Notes
Criteria	Executive y Notes
Υ	
Continuing Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Υ	
Calibration Verification:	
Within	Exceedance/Notes
Criteria	Exact durine, Notes
NA	
Method blanks:	
Within	Exceedance/Notes
Criteria	Endecadinely Notes
Υ	

Exceedance/Notes



Within

Criteria NA

Interference	Check Sam	ples (ICS)	(ICP	metals only	/):
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Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within	Exceedance/Notes
Criteria	Exceedance/ Notes
NA	



	EFA REGION 5 START CONTRACT
Field duplicates:	
Within	Exceedance/Notes
Criteria	Executance/ Notes
NA	
LCSs/LCSDs:	
Within	- 4
Criteria	Exceedance/Notes
Υ	
Sample dilutions:	
Within	Formandon on / Notice
Criteria	Exceedance/Notes
NA	
Re-extraction and reanalysis:	
Within	Exceedance/Notes
Criteria	Exceedance/Notes
NA	
Second column confirmation (GC and I	IPLC analyses only):
Within	Fysoodones/Notes
Criteria	Exceedance/Notes
NA	
Internal Standards:	
Within	Exceedance/Notes
Criteria	·



Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	Manual integration was required for trichloroethene for GRPCE-07-IA- to determine the reported response.

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

Other labe	
Within	Even adams / Nintes
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.





(BASEMENT)

ANALYTICAL RESULTS

Date: 21-Jun-16

Client: TETRA TECH

GRAND RAPIDS EMERGENCY RESPONSE Project:

Work Order No: 16061185

Sample Identification GRPCE-07-IA

Date Sampled: 6/19/2016

006A Lab Number:

Air, Can Sample Type:

Date Received: 6/20/2016 Analysis Date: 6/20/2016

EPA Method TO-15A Test Method:

Analyst: DRS

Initial Pressure:

-0.99 psig

Final Pressure: -0.99 psig

Canister ID:

14569

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	0.040	0.024	0.16	(0.010	0.0061	0.04	1	1
127-18-4	Tetrachloroethene	29	0.036	0.27	4.2	0.0053	0.04	1	
156-60-5	trans-1.2-Dichloroethene	0.040	0.019	0.16	0.010	0.0049	0.04	1	J
79-01-6	Trichloroethene	0.38	0.021	0.21	0.070	0.0039	0.04	- 1	
75-01-4	Vinyl Chloride	ND	0.022	0.10	ND	0.0088	004	1	U



ND; Less than the indicated limit of detection (LOD)

RL: Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

^{-;} Information not available or not applicable.



Date: 21-Jun-16

Client:	TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE

(MAIN)

Work Order No: 16061185

Sample Identification GRPCE-07-IA

Date Sampled: 6/19/2016

Lab Number: 005A

Date Received: 6/20/2016

Sample Type: Air, Can

Analysis Date: 6/20/2016

Test Method: EPA Method TO-15A

Analyst: DRS

Initial Pressure: -1.44 psig
Final Pressure: -1.44 psig

Canister ID:

14022

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	ND	0.024	0.16	ND	0.0061	(0.04)	1	U
127-18-4	Tetrachloroethenc	4.3	0.036	0.27	0.64	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	0.040	0.019	0.16	0.010	0.0049	0.04	1	J
79-01-6	Trichloroethene	0.43	0.021	0.21	0.080	0.0039	0.04	1	
75-01-4	Vinyl Chloride	NI)	0.022	0.10	ND	0.0088	(0.04)	1	U



ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

^{-,} Information not available or not applicable.



Date: 21-Jun-16

Client:	TETRA TECH		
Project:	GRAND RAPIDS EMERGENCY RESPONSE	Work Order No:	16061185
Sample Identificat	tion GRPCE-07-IA-1168 (BASEMENT)	Date Sampled:	6/19/2016
Lab Number:	004A	Date Received:	6/20/2016
Sample Type:	Air, Can	Analysis Date:	6/20/2016
Test Method:	EPA Method TO-15A	Analyst:	DRS
Initial Pressure:	-1.1 psig		
Final Pressure:	-1.1 psig		
Canister ID:	14632		

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RI. (ug/m³)	Results (pphV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	0.040	0.024	0.16	0.010	0.0061	0.04	1	J
127-18-4	Tetrachloroethene	39	0.036	0.27	5.8	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	0.040	0.019	0.16	0.010	0.0049	0.04	1	1
79-01-6	Trichloroethene	0.32	0.021	0.21	0.060	0.0039	0.04	1	
75-01-4	Vinyl Chloride	ND	0.022	0.10) ND	0.0088	0.04	1	U



--; Information not available or not applicable.

ND; Less than the indicated limit of detection (I.OD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S: Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



(ug/m³)

6.5

0.040

0 16

ND

ND

ANALYTICAL RESULTS

Date: 21-Jun-16

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

Analyte

Work Order No: 16061185

Sample Identification GRPCE-07-IA-1168 (MAIN)

003A

(ppbV)

0.96

0.010

0.030

Date Sampled: 6/19/2016

Lab Number:

Date Received: 6/20/2016

Sample Type:

Air, Can

Analysis Date: 6/20/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

(ppbV)

0.0053

0.0049

0.0039

ND 0.0061

(ppbV)

0.04

0.04

0.04

0.04

DF Qual

U

Initial Pressure:

-1.09 psig

Final Pressure: Canister 1D:

CAS#

156-59-2

127-18-4

156-60-5

79-01-6

75-01-4

-1.09 psig 14467

cis-1,2-Dichloroethene

trans-1,2-Dichlorocthene

Tetrachloroethene

Trichloroethene

Vinyl Chloride

Results MDL RL Results MDL RL

0.16

0.27

0.16

0.21

0.10

(ug/m3) (ug/m3)

0.024

0.036

0.019

0.021

0.022

ND	0.0088	0.04
0	rau	7
0	fu	2



ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL: Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Date: 21-Jun-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16061185

Sample Identification GRPCE-08-IA

Date Sampled: 6/19/2016

Lab Number:

001A

Date Received: 6/20/2016

Sample Type: Air, Can

Analysis Date: 6/20/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-1.13 psig

Final Pressure:

-1.13 psig

Canister ID:

14296

CAS#	Analyte	Results (ug/m³)	MDL (ug/m²)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	ND	0.024	0.16	ND	0.0061	0.04	1	U
127-18-4	Tetrachloroethene	2.8	0.036	0.27	0.41	0.0053	0.04	1	
156-60-5	trans-1,2-Dichlorocthene	0.040	0.019	0.16	0.010	0.0049	0.04	1	J
79-01-6	Trichloroethene	0.16	0.021	0.21	0.030	0.0039	0.04	1	J
75-01-4	Vinyl Chloride	ND	0.022	0.10	ND	0.0088	0.04	1	U



ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Date: 21-Jun-16

Date Sampled: 6/19/2016

Date Received: 6/20/2016

Analysis Date: 6/20/2016

Analyst: DRS

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16061185

Sample Identification GRPCE-08-IA-

Lab Number: 002A

. - .. .

Sample Type: Air, Can

Test Method: EPA Method TO-15A

Initial Pressure: -1.07 psig
Final Pressure: -1.07 psig

Canister ID: 14583

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	ND	0.024	0.16	ND	0.0061	0.04	1	U
127-18-4	Tetrachloroethene	3.7	0.036	0.27	0.55	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	0.040	0.019	0.16	0.010	0.0049	0.04	1	J
79-01-6	Trichloroethene	0.11	0.021	0.21	0.020	0.0039	0.04	1	J
75-01-4	Vinyl Chloride	ND	0.022	0.10	ND	0.0088	0.04	1	U



RL; Report Limit

J: Value is between the MDL and Reporting Limit, estimated r

MDL, Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



ANALYTICAL RESULTS

Date: 21-Jun-16

Date Sampled: 6/19/2016

Date Received: 6/20/2016

Analysis Date: 6/20/2016

Analyst: DRS

Client: TETRA TECH

GRAND RAPIDS EMERGENCY RESPONSE Project: Work Order No: 16061185

Sample Identification GRPCE-10-OA

Lab Number:

007A

Sample Type:

Air, Can

Test Method:

EPA Method TO-15A

Initial Pressure:

-1.58 psig

Final Pressure: Canister ID:

-1.58 psig 14021

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (pphV)	DF	Qual
156-59-2	cis-1,2-Dichloroethenc	ND	0.024	0.16	ND	0.0061	(0.04)	1	U
127-18-4	Tetrachloroethene	0.34	0.036	0.27	0.050	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	ND	0.019	0.16	ND	0.0049	0.04	1	U
79-01-6	Trichloroethene	0.16	0.021	0.21	0.030	0.0039	0.04	1	J
75-01-4	Vinyl Chloride	ND	0.022	0.10	ND	0.0088	(0 04)	1	U



ND; Less than the indicated limit of detection (LOD)

RL: Report Limit

J: Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S: Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve

^{-:} Information not available or not applicable.



July 6, 2016

Betsy Nightingale On-Scene Coordinator U.S. Environmental Protection Agency Region 5 9311 Groh Road Grosse Ile, MI 48138-1697

Subject: Data Validation Report

Grand Rapids VI ER

EPA Contract No. EP-S5-13-01

Technical Direction Document No. S05-0001-1605-010

Document Tracking No. 0914

Dear Ms. Nightingale:

Tetra Tech Inc. (Tetra Tech) is submitting this Data Validation Report for one air sample collected at the Grand Rapids VI ER site. The sample was collected June 24, 2016 and was analyzed for volatile organic compounds by Bureau Veritas Laboratories. Tetra Tech received the final data on July 1, 2016.

Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines* (NFG) for Superfund Organic Methods Data Review (August 2014).

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

If you have any questions regarding this Data Validation Report, please call me at (662) 681-5727.

Sincerely,

Jessica A. Vickers START Chemist

Enclosure

cc: Kevin Scott, Tetra Tech Program Manager

Michael Browning, Tetra Tech Project Manager

TDD File

Jeoaca a Vicker

ATTACHMENT 1 DATA VALIDATION REPORT SDG 16061766

Site Name	Grand Rapids VI ER		TDD No.	S05-0001-1605-010
Document Tracking No.	0914			303-0001-1603-010
Data Reviewer (signature and date)	Jesaca A. Vickers July 5, 2016		Technical Reviewer (signature and date)	Hang N. Elis III 6 July 2016
Laboratory Report No.	16061766		Laboratory	Bureau Veritas/Novi, MI
Analyses	Volatile organic compounds (VOCs) by EPA	Μ	ethod TO-15	
Samples and Matrix	One air sample			
Field Duplicate Pairs	None			
Field Blanks	None			

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Within	Exceedance/Notes
Criteria	LACEEdance/ Notes
Υ	
nitial Calibration:	
Within	Exceedance/Notes
Criteria	exceedance/Notes
Υ	
ontinuing Calibration:	
Within	Exceedance/Notes
Criteria	
Υ	
alibration Verification:	
Within	Fuses device /Notes
Criteria	Exceedance/Notes
NA	
Лethod blanks:	
Within	E (No. 1
Criteria	Exceedance/Notes
Υ	

Exceedance/Notes



Within

Criteria NA

Interference Che	ck Samples	(ICS) (I	ICP metals only	y):
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Within Criteria	Exceedance/Notes
NA	
System mo	onitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	



	EFA REGION 5 START CONTRACT
Field duplicates:	
Within	Exceedance/Notes
Criteria	Exceedince/Notes
NA	
LCSs/LCSDs:	
Within	
Criteria	Exceedance/Notes
Υ	
Sample dilutions:	
Within	Fire a device / Nation
Criteria	Exceedance/Notes
NA	
Re-extraction and reanalysis:	
Within	Exceedance/Notes
Criteria	Exceedance/Notes
NA	
,	
Second column confirmation (GC and	IPLC analyses only):
Within	Fyenedowee/Netes
Criteria	Exceedance/Notes
NA	
Internal Standards:	
Within	Exceedance/Notes
Criteria	



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IOrgot	2021	<i>I</i> + ~ 1	AAN+	はれたつ	tian:
Target	allalv	/LE I	ueni	IIILA	uon.

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	

Tentatively identified compounds:

 ,	indication composition
Within	Exceedance/Notes
Criteria	Execedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

Other laber	~//).
Within	Evenedance/Notes
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.





ANALYTICAL RESULTS

Sample Identification GRPCE-1-OA

Date: 29-Jun-16

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16061766

Date Sampled: 6/24/2016

Date Received: 6/28/2016

10001700

Lab Number:

001A

Sample Type:

Air, Can

Test Method:

EPA Method TO-15A

Analysis Date: 6/29/2016

Analyst: DRS

Initial Pressure:

-1.69 psig

Final Pressure:

-1.69 psig

Canister ID:

14542

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	(0.040)	0.024	0.16	0.010	0.0061	0.04	1	J
127-18-4	Tetrachloroethene	0.14	0.036	0.27	0.020	0.0053	0.04	1	I
156-60-5	trans-1,2-Dichloroethene	0.20	0.019	0.16	0.050	0.0049	0.04	1	
79-01-6	Trichloroethene	0.16	0.021	0.21	0.030	0.0039	0.04	1	1
75-01-4	Vinyl Chloride	DIA.	0.022	The state of the s	AND O	0.0088	0.04	1	Ů



- S; Spike Recovery outside accepted recovery limits
- R; RPD outside accepted recovery limits
- T; Tentatively Identified Compound (TIC)
- E; Value exceeds linear range of calibration curve



July 6, 2016

Betsy Nightingale On-Scene Coordinator U.S. Environmental Protection Agency Region 5 9311 Groh Road Grosse Ile, MI 48138-1697

Subject: Data Validation Report

Grand Rapids VI ER

EPA Contract No. EP-S5-13-01

Technical Direction Document No. S05-0001-1605-010

Document Tracking No. 0920

Dear Ms. Nightingale:

Tetra Tech Inc. (Tetra Tech) is submitting this Data Validation Report for three air samples (including a field duplicate) collected at the Grand Rapids VI ER site. The samples were collected June 25, 2016 and was analyzed for volatile organic compounds by ALS Environmental. Tetra Tech received the final data on July 5, 2016.

Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines* (NFG) for Superfund Organic Methods Data Review (August 2014).

No rejection of results was required for this data set. The data is usable as qualified based on the exceedances discussed in this validation.

If you have any questions regarding this Data Validation Report, please call me at (662) 681-5727.

Sincerely,

Jessica A. Vickers START Chemist

Enclosure

cc: Kevin Scott, Tetra Tech Program Manager

Michael Browning, Tetra Tech Project Manager

TDD File

Jesaca a Vickers

ATTACHMENT 1 DATA VALIDATION REPORT SDG P1603234

Site Name	Grand Rapids VI ER		TDD No.	SOE 0001 160E 010		
Document Tracking No.	0920		1221101	S05-0001-1605-010		
Data Reviewer (signature and date)	Jeoaca a. Vickers July 6, 201	6	Technical Reviewer (signature and date)	Hang N. Elis III 6 July 2016		
Laboratory Report No.	P1603234		Laboratory	ALS Laboratories/Simi Valley, CA		
Analyses	Volatile organic compounds (VOCs) by E	PA N	Nethod TO-15			
Samples and Matrix	Three air samples (including a field dup	icate	2)			
Field Duplicate Pairs	GRPCE-01-IA- (Basement	Hall)	/GRPCE-01-IA-	(Basement Hall)-DP		
Field Blanks	None					

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection of results was required for this data set. The data is usable as qualified based on the exceedances discussed in this validation.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Within		
Criteria	Exceedance/Notes	
Υ		
nitial Calibration:		
Within	Exceedance/Notes	
Criteria	Exceedance/Notes	
Υ		
ontinuing Calibration:		
Within	Exceedance/Notes	
Criteria		
Υ		
alibration Verification:		
Within	Exceedance/Notes	
Criteria	Litteedance/Notes	
Υ		
lethod blanks:		
Within	Evene denne /Netes	
Criteria	Exceedance/Notes	
Υ		

Exceedance/Notes



Field blanks:
Within

Criteria NA

Interference	Check Sam	ples (ICS)	(ICP	metals only	/):
--------------	-----------	------------	------	-------------	-----

Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes	
NA		

Laboratory duplicates:

Within	Excoordance/Notes
Criteria	Exceedance/Notes
NA	



Field duplicates:

Within Criteria	Exceedance/Notes		
N	GRPCE-01-IA- (Basement Hall)/GRPCE-01-IA- (Basement Hall)-DP: The precision criterion was exceeded for trans-1,2-dichloroethene; therefore, the results were qualified as estimated (J/UJ) for both samples.		

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Υ	

Sample dilutions:

Within Criteria		Exceed	dance/Notes	
V	1.53x: GRPCE-01-IA-	(Basement Hall)-DP	1.71x: GRPCE-01-IA-	(Main)
T	1.68x: GRPCE-01-IA-	(Basement Hall)	7	

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
Υ	

Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	

Tentatively identified compounds:

	,
Within	Evenedance/Notes
Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within	Exceedance/Notes			
Criteria				
Υ				

Other [specify]:

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.



ANALYTICAL RESULTS SUMMARY ALS LABORATORIES REPORT NO. P1603234

Samp_No		Analyte	Result Lab_Qualifier	Result_Units	MDL Reporting_	Limit Val_	Result Val_Qualifier
GRPCE-01-IA-	(Basement Hall)	cis-1,2-Dichloroethene	0.17 U	ug/m3	0.15	0.17	0.17 U
GRPCE-01-IA-	(Basement Hall)	Tetrachloroethene	3.9	ug/m3	0.12	0.17	3.9
GRPCE-01-IA-	(Basement Hall)	trans-1,2-Dichloroethene	0.17 U	ug/m3	0.15	0.17	0.17 UJ
GRPCE-01-IA-	(Basement Hall)	Trichloroethene (TCE)	0.17 U	ug/m3	0.15	0.17	0.17 U
GRPCE-01-IA-	(Basement Hall)	Vinyl Chloride	0.17 U	ug/m3	0.16	0.17	0.17 U
GRPCE-01-IA-	(Basement Hall)-DP	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-01-IA-	(Basement Hall)-DP	Tetrachloroethene	3.8	ug/m3	0.11	0.15	3.8
GRPCE-01-IA-	(Basement Hall)-DP	trans-1,2-Dichloroethene	0.98	ug/m3	0.14	0.15	0.98 J
GRPCE-01-IA-	(Basement Hall)-DP	Trichloroethene (TCE)	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-01-IA-	(Basement Hall)-DP	Vinyl Chloride	0.15 U	ug/m3	0.15	0.15	0.15 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.17 U	ug/m3	0.16	0.17	0.17 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	0.48	ug/m3	0.12	0.17	0.48
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.17 U	ug/m3	0.16	0.17	0.17 U
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.17 U	ug/m3	0.15	0.17	0.17 U
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.17 U	ug/m3	0.16	0.17	0.17 U



July 13, 2016

Betsy Nightingale On-Scene Coordinator U.S. Environmental Protection Agency Region 5 9311 Groh Road Grosse Ile, MI 48138-1697

Subject: Data Validation Report

Grand Rapids VI ER

EPA Contract No. EP-S5-13-01

Technical Direction Document No. S05-0001-1605-010

Document Tracking No. 0927

Dear Ms. Nightingale:

Tetra Tech Inc. (Tetra Tech) is submitting these Data Validation Reports for 29 air samples (including two field duplicates) collected at the Grand Rapids VI ER site. The samples were collected from June 24 through July 4, 2016 and were analyzed for volatile organic compounds by Eurofins-Air Toxics and ALS Environmental. Tetra Tech received the last of the data on July 11, 2016.

Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines* (NFG) for Superfund Organic Methods Data Review (August 2014).

No rejection of results was required for this data set. The data is usable as qualified based on the exceedances discussed in this validation.

If you have any questions regarding these Data Validation Reports, please call me at (662) 681-5727.

Sincerely,

Jessica A. Vickers START Chemist

Enclosure

cc: Kevin Scott, Tetra Tech Program Manager

Michael Browning, Tetra Tech Project Manager

TDD File

Jesaca a Vickers

ATTACHMENT 1

DATA VALIDATION REPORTS
EUROFINS-AIR TOXICS SDGS 1606556, 1606587, AND 1607089
ALS SDGS P1603260 AND P1603338

Site Name	Grand Rapids VI ER				
Document Tracking No.	0927A	TD	DD No.	S05-0001-1605-010	
Data Reviewer (signature and date)	Jesaca a Vickers July 12, 2016		echnical Reviewer ignature and date)	Hang N. Ellis III 13 July 2016	
Laboratory Report No.	1606556	Lal	boratory	Eurofins-Air Toxics/Folsom, CA	
Analyses	Volatile organic compounds (VOCs) by EPA	Meth	od TO-15		
Samples and Matrix	Two air samples				
Field Duplicate Pairs	None				
Field Blanks	None				

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Within	
Criteria	Exceedance/Notes
Υ	
nitial Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/Notes
Υ	
ontinuing Calibration:	
Within	Exceedance/Notes
Criteria	
Υ	
alibration Verification:	
Within	Exceedance/Notes
Criteria	Litteedance/Notes
Υ	
lethod blanks:	
Within	Evene denne /Netes
Criteria	Exceedance/Notes
Υ	

Exceedance/Notes



Field blanks:
Within

Criteria NA

Interference	Check Sam	ples (ICS)	(ICP	metals only	/):
--------------	-----------	------------	------	-------------	-----

Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within	Exceedance/Notes
Criteria	Exceedance/ Notes
NA	



	221112010110011111111111111111111111111
Field dupli	cates:
Within Criteria	Exceedance/Notes
NA	
LCSs/LCSD	s:
Within Criteria	Exceedance/Notes
Υ	
Sample dil	utions:
Within Criteria	Exceedance/Notes
Υ	1.68x: GRPCE-01-IA- SFR) and GRPCE-01-IA- 2 nd Floor-W)
Re-extract	ion and reanalysis:
Within Criteria	Exceedance/Notes
NA	
Second co	lumn confirmation (GC and HPLC analyses only):
Within Criteria	Exceedance/Notes
NA	
Internal St	andards:
Within Criteria	Exceedance/Notes



Target analyte identification	Target	analy	vte i	iden	tifica	ition
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Within Criteria	Exceedance/Notes
Υ	
nalyte qua	ntitation and MDLs/RLs:
Within	
Criteria	Exceedance/Notes

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

Other Labe	enyl.
Within	Evenedance/Notes
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.



ANALYTICAL RESULTS SUMMARY EUROFINS-AIR TOXICS REPORT NO. 1606556

CLIENTSAMPID	C	OMPOUND NAME	REPLMT	UNITS	RESULTS	DATAFLAGS	VAL_RESULTS	VAL_QUAL
GRPCE-01-IA-	R) V	inyl Chloride	0.17	PPBV		ND	0.17	U
GRPCE-01-IA-	R) tr	rans-1,2-Dichloroethene	0.17	PPBV		ND	0.17	U
GRPCE-01-IA-	R) ci	is-1,2-Dichloroethene	0.17	PPBV	0.43		0.43	
GRPCE-01-IA-	R) Ti	richloroethene	0.17	PPBV	0.74		0.74	
GRPCE-01-IA-	R) Te	etrachloroethene	0.17	PPBV	6.5		6.5	
GRPCE-01-IA-	R) V	inyl Chloride	0.43	UG/M3		ND	0.43	U
GRPCE-01-IA-	R) tr	ans-1,2-Dichloroethene	0.67	UG/M3		ND	0.67	U
GRPCE-01-IA-	R) ci	is-1,2-Dichloroethene	0.67	UG/M3	1.7		1.7	
GRPCE-01-IA-	R) Ti	richloroethene	0.90	UG/M3	4.0		4.0	
GRPCE-01-IA-	R) Te	etrachloroethene	1.1	UG/M3	44		44	
GRPCE-01-IA-	d Floor-W) V	inyl Chloride	0.17	PPBV		ND	0.17	U
GRPCE-01-IA-	d Floor-W) tr	rans-1,2-Dichloroethene	0.17	PPBV		ND	0.17	U
GRPCE-01-IA-	d Floor-W) ci	is-1,2-Dichloroethene	0.17	PPBV		ND	0.17	U
GRPCE-01-IA-	d Floor-W) Ti	richloroethene	0.17	PPBV		ND	0.17	U
GRPCE-01-IA-	d Floor-W) Te	etrachloroethene	0.17	PPBV	1.2		1.2	
GRPCE-01-IA-	d Floor-W) V	inyl Chloride	0.43	UG/M3		ND	0.43	U
GRPCE-01-IA-	d Floor-W) tr	rans-1,2-Dichloroethene	0.67	UG/M3		ND	0.67	U
GRPCE-01-IA-	d Floor-W) ci	is-1,2-Dichloroethene	0.67	UG/M3		ND	0.67	U
GRPCE-01-IA-	d Floor-W) Ti	richloroethene	0.90	UG/M3		ND	0.90	U
GRPCE-01-IA-	d Floor-W) Te	etrachloroethene	1.1	UG/M3	8.0		8.0	

Site Name	Grand Rapids VI ER	TDD No.	COT 0001 160F 010		
Document Tracking No.	0927B		S05-0001-1605-010		
Data Reviewer (signature and date)	Jesaca a. Vickers July 12, 2016	Technical Reviewer (signature and date)	Hang N. Ellis III 13 July 2016		
Laboratory Report No.	1606587	Laboratory	Eurofins-Air Toxics/Folsom, CA		
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15			
Samples and Matrix	Four air samples (including a field duplicate	·)			
Field Duplicate Pairs	GRPCE-01-IA-429Umatilla/GRPCE-01-IA-429	9Umatilla-DP			
Field Blanks	None				

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Within	
Criteria	Exceedance/Notes
Υ	
nitial Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/Notes
Υ	
ontinuing Calibration:	
Within	Exceedance/Notes
Criteria	
Υ	
alibration Verification:	
Within	Exceedance/Notes
Criteria	Litteedance/Notes
Υ	
lethod blanks:	
Within	Evene denne /Netes
Criteria	Exceedance/Notes
Υ	

Exceedance/Notes



Field blanks:
Within

Criteria NA

Interference	Check Sam	ples (ICS)	(ICP	metals only	/):
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Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within	Exceedance/Notes
Criteria	Exceedance/ Notes
NA	



Field duplicates:

Within Criteria	Exceedance/Notes
Υ	Associated results were non-detect.

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Υ	

Sample dilutions:

Within Criteria			Exceedance/Notes		
V	1.57x: GRPCE-02-IA-	(Main)	4.55x: GRPCE-01-IA-	DP	
Y	1.62x: GRPCE-02-IA-	(Basement)	5.47x: GRPCE-01-IA-		

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
Υ	



Target analyte identification	Target	analy	vte i	iden	tifica	ition
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Within Criteria	Exceedance/Notes
Υ	
nalyte qua	ntitation and MDLs/RLs:
Within	
Criteria	Exceedance/Notes

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

	Other Labe	**************************************						
	Within	Evenedance/Notes						
	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.



ANALYTICAL RESULTS SUMMARY EUROFINS-AIR TOXICS REPORT NO. 1606587

CLIENTSAMPID		COMPOUND NAME	REPLMT	UNITS RES	SULTS DATAFLAGS	VAL_RESULTS	VAL_QUAL
GRPCE-01-IA-		Vinyl Chloride	0.55	PPBV	ND	0.55	U
GRPCE-01-IA-		trans-1,2-Dichloroethene	0.55	PPBV	ND	0.55	U
GRPCE-01-IA-		cis-1,2-Dichloroethene	0.55	PPBV	ND	0.55	U
GRPCE-01-IA-		Trichloroethene	0.55	PPBV	ND	0.55	U
GRPCE-01-IA-		Tetrachloroethene	0.55	PPBV	ND	0.55	U
GRPCE-01-IA-		Vinyl Chloride	1.4	UG/M3	ND	1.4	U
GRPCE-01-IA-		trans-1,2-Dichloroethene	2.2	UG/M3	ND	2.2	U
GRPCE-01-IA-		cis-1,2-Dichloroethene	2.2	UG/M3	ND	2.2	U
GRPCE-01-IA-		Trichloroethene	2.9	UG/M3	ND	2.9	U
GRPCE-01-IA-		Tetrachloroethene	3.7	UG/M3	ND	3.7	U
GRPCE-01-IA-	DP	Vinyl Chloride	2.3	PPBV	ND	2.3	U
GRPCE-01-IA-	DP	cis-1,2-Dichloroethene	2.3	PPBV	ND	2.3	U
GRPCE-01-IA-	DP	Trichloroethene	2.3	PPBV	ND	2.3	U
GRPCE-01-IA-	DP	Tetrachloroethene	2.3	PPBV	ND	2.3	U
GRPCE-01-IA-	DP	trans-1,2-Dichloroethene	2.3	PPBV	ND	2.3	U
GRPCE-01-IA-	DP	Vinyl Chloride	5.8	UG/M3	ND	5.8	U
GRPCE-01-IA-	DP	cis-1,2-Dichloroethene	9.0	UG/M3	ND	9.0	U
GRPCE-01-IA-	DP	Trichloroethene	12	UG/M3	ND	12	U
GRPCE-01-IA-	DP	Tetrachloroethene	15	UG/M3	ND	15	U
GRPCE-01-IA-	DP	trans-1,2-Dichloroethene	9.0	UG/M3	ND	9.0	U
GRPCE-02-IA-	(Main)	Vinyl Chloride	0.16	PPBV	ND	0.16	U
GRPCE-02-IA-	(Main)	trans-1,2-Dichloroethene	0.16	PPBV	ND	0.16	U
GRPCE-02-IA-	(Main)	cis-1,2-Dichloroethene	0.16	PPBV	ND	0.16	U
GRPCE-02-IA-	(Main)	Trichloroethene	0.16	PPBV	ND	0.16	U
GRPCE-02-IA-	(Main)	Tetrachloroethene	0.16	PPBV 0.0	32 J	0.032	J
GRPCE-02-IA-	(Main)	Vinyl Chloride	0.40	UG/M3	ND	0.40	U
GRPCE-02-IA-	(Main)	trans-1,2-Dichloroethene	0.62	UG/M3	ND	0.62	U
GRPCE-02-IA-	(Main)	cis-1,2-Dichloroethene	0.62	UG/M3	ND	0.62	U
GRPCE-02-IA-	(Main)	Trichloroethene	0.84	UG/M3	ND	0.84	U
GRPCE-02-IA-	(Main)	Tetrachloroethene	1.1	UG/M3 0.2	2 J	0.22	J
GRPCE-02-IA-	(Basement)	Vinyl Chloride	0.16	PPBV	ND	0.16	U

ANALYTICAL RESULTS SUMMARY EUROFINS-AIR TOXICS REPORT NO. 1606587

CLIENTSAMPID		COMPOUND NAME	REPLMT	UNITS	RESULTS	DATAFLAGS	VAL_RESULTS	VAL_QUAL
GRPCE-02-IA-	(Basement)	trans-1,2-Dichloroethene	0.16	PPBV		ND	0.16	U
GRPCE-02-IA-	(Basement)	cis-1,2-Dichloroethene	0.16	PPBV		ND	0.16	U
GRPCE-02-IA-	(Basement)	Trichloroethene	0.16	PPBV		ND	0.16	U
GRPCE-02-IA-	(Basement)	Tetrachloroethene	0.16	PPBV	0.042	J	0.042	J
GRPCE-02-IA-	(Basement)	Vinyl Chloride	0.41	UG/M3		ND	0.41	U
GRPCE-02-IA-	(Basement)	trans-1,2-Dichloroethene	0.64	UG/M3		ND	0.64	U
GRPCE-02-IA-	(Basement)	cis-1,2-Dichloroethene	0.64	UG/M3		ND	0.64	U
GRPCE-02-IA-	(Basement)	Trichloroethene	0.87	UG/M3		ND	0.87	U
GRPCE-02-IA-	(Basement)	Tetrachloroethene	1.1	UG/M3	0.29	J	0.29	J

Site Name	Grand Rapids VI ER	TDD No.	S05-0001-1605-010
Document Tracking No.	0927C		
Data Reviewer (signature and date)	Jesaca a Vickers July 13, 2016	Technical Reviewer (signature and date)	Hang N. Ellis III 13 July 2016
Laboratory Report No.	1607089	Laboratory	Eurofins-Air Toxics/Folsom, CA
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15	
Samples and Matrix	Thirteen air samples (including a field dupli	cate)	
Field Duplicate Pairs	GRPCE-01-IA- (WDH)/GRPCE-01-IA	A- (WDH)-DP	
Field Blanks	None		

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Within	
Criteria	Exceedance/Notes
Υ	
nitial Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/Notes
Υ	
ontinuing Calibration:	
Within	Exceedance/Notes
Criteria	
Υ	
alibration Verification:	
Within	Exceedance/Notes
Criteria	Litteedance/Notes
Υ	
lethod blanks:	
Within	Even dence /Netes
Criteria	Exceedance/Notes
Υ	

Exceedance/Notes



Field blanks:
Within

Criteria NA

Interference	Check Sam	ples (ICS)	(ICP	metals only	/):
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Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within	Exceedance/Notes
Criteria	Exceedance/ Notes
NA	



Field duplicates:

Within Criteria	Exceedance/Notes
Υ	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Υ	

Sample dilutions:

Within Criteria		Exceedan	ce/Notes	
	1.43x: GRPCE-01-IA-	(Basement)	1.73x: GRPCE-01-IA-	(WDH)
	1.52x: GRPCE-01-IA-	(Carpentry)	1.99x: GRPCE-01-IA-	(Main)
	1.53x: GRPCE-01-IA-	(Basement)	2.44x: GRPCE-01-IA-	(HBI)
Υ	1.57x: GRPCE-01-IA-		2.78x: GRPCE-01-IA-	(Main)
	1.62x: GRPCE-01-IA-	(Basement)	2.87x: GRPCE-01-IA-	(Main)
	1.70x: GRPCE-01-IA-	(Basement) and GRPCE-01-IA-	(Outside)	
	1.71x: GRPCE-01-IA-	(WDH)-DP		

Re-extraction and reanalysis:

Witl Crite		Exceedance/Notes
N/	Α	

Second column confirmation (GC and HPLC analyses only):

Within Criteria	Exceedance/Notes
NA	



Internal Standards:		
Within		
Criteria	Exceedance/Notes	
Y		
Target analyte identification:		
Within	Exceedance/Notes	
Criteria	Exceedance/ Notes	
Y		
Analyte quantitation and MDLs/RLs:		
Within		
Criteria	Exceedance/Notes	
Y		
Tantativaly identified compounds		
Tentatively identified compounds: Within		
Criteria	Exceedance/Notes	
NA		
IVA		
System performance and instrument s	tability:	
Within		
Criteria	Exceedance/Notes	
Y		
Other [specify]:		
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.



	SAMPID	COMPOUND NAME	REPLMT		RESULTS	DATAFLAGS	VAL_RESULTS	VAL_DATAFLAGS
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.20	PPBV	0.000	ND	0.20	U
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.20	PPBV	0.092	J	0.092	J
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.20	PPBV		ND	0.20	U
GRPCE-01-IA-	(Main)	Trichloroethene	0.20	PPBV	0.000	ND	0.20	U
GRPCE-01-IA-	(Main)	Tetrachloroethene	0.20	PPBV	0.038	J	0.038	J
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.51	UG/M3		ND	0.51	U
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.79	UG/M3	0.36	J	0.36	J
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.79	UG/M3		ND	0.79	U
GRPCE-01-IA-	(Main)	Trichloroethene	1.1	UG/M3		ND	1.1	U
GRPCE-01-IA-	(Main)	Tetrachloroethene	1.3	UG/M3	0.26	J	0.26	J
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.16	PPBV		ND	0.16	U
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.16	PPBV		ND	0.16	U
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.16	PPBV		ND	0.16	U
GRPCE-01-IA-	(Basement)	Trichloroethene	0.16	PPBV		ND	0.16	U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	0.16	PPBV	0.22		0.22	
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.41	UG/M3		ND	0.41	U
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.64	UG/M3		ND	0.64	U
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.64	UG/M3		ND	0.64	U
GRPCE-01-IA-	(Basement)	Trichloroethene	0.87	UG/M3		ND	0.87	U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	1.1	UG/M3	1.5		1.5	
GRPCE-01-IA-		Vinyl Chloride	0.16	PPBV		ND	0.16	U
GRPCE-01-IA-		trans-1,2-Dichloroethene	0.16	PPBV		ND	0.16	U
GRPCE-01-IA-		cis-1,2-Dichloroethene	0.16	PPBV		ND	0.16	U
GRPCE-01-IA-		Trichloroethene	0.16	PPBV		ND	0.16	U
GRPCE-01-IA-		Tetrachloroethene	0.16	PPBV	0.21		0.21	
GRPCE-01-IA-		Vinyl Chloride	0.40	UG/M3		ND	0.40	U
GRPCE-01-IA-		trans-1,2-Dichloroethene	0.62	UG/M3		ND	0.62	U
GRPCE-01-IA-		cis-1,2-Dichloroethene	0.62	UG/M3		ND	0.62	U
GRPCE-01-IA-		Trichloroethene	0.84	UG/M3		ND	0.84	U
GRPCE-01-IA-		Tetrachloroethene	1.1	UG/M3	1.4		1.4	
GRPCE-01-IA-	(HBI)	Vinyl Chloride	0.24	PPBV		ND	0.24	U
GRPCE-01-IA-	(HBI)	trans-1,2-Dichloroethene	0.24	PPBV		ND	0.24	U
GRPCE-01-IA-	(HBI)	cis-1,2-Dichloroethene	0.24	PPBV		ND	0.24	U
GRPCE-01-IA-	(HBI)	Trichloroethene	0.24	PPBV		ND	0.24	U
GRPCE-01-IA-	(HBI)	Tetrachloroethene	0.24	PPBV		ND	0.24	U
	` '7	- :						

	TSAMPID	COMPOUND NAME		UNITS RE	ESULTS	DATAFLAGS		VAL_DATAFLAGS
GRPCE-01-IA-	(HBI)	Vinyl Chloride	0.62	UG/M3		ND	0.62	U
GRPCE-01-IA-	(HBI)	trans-1,2-Dichloroethene	0.97	UG/M3		ND	0.97	U
GRPCE-01-IA-	(HBI)	cis-1,2-Dichloroethene	0.97	UG/M3		ND	0.97	U
GRPCE-01-IA-	(HBI)	Trichloroethene	1.3	UG/M3		ND	1.3	U
GRPCE-01-IA-	(HBI)	Tetrachloroethene	1.6	UG/M3		ND	1.6	U
GRPCE-01-IA-	(WDH)	Vinyl Chloride	0.17	PPBV		ND	0.17	U
GRPCE-01-IA-	(WDH)	trans-1,2-Dichloroethene	0.17	PPBV		ND	0.17	U
GRPCE-01-IA-	(WDH)	cis-1,2-Dichloroethene	0.17	PPBV		ND	0.17	U
GRPCE-01-IA-	(WDH)	Trichloroethene	0.17	PPBV		ND	0.17	U
GRPCE-01-IA-	(WDH)	Tetrachloroethene	0.17	PPBV		ND	0.17	U
GRPCE-01-IA-	(WDH)	Vinyl Chloride	0.44	UG/M3		ND	0.44	U
GRPCE-01-IA-	(WDH)	trans-1,2-Dichloroethene	0.68	UG/M3		ND	0.68	U
GRPCE-01-IA-	(WDH)	cis-1,2-Dichloroethene	0.68	UG/M3		ND	0.68	U
GRPCE-01-IA-	(WDH)	Trichloroethene	0.93	UG/M3		ND	0.93	U
GRPCE-01-IA-	(WDH)	Tetrachloroethene	1.2	UG/M3		ND	1.2	U
GRPCE-01-IA-	(WDH) DP	Vinyl Chloride	0.17	PPBV		ND	0.17	U
GRPCE-01-IA-	(WDH) DP	trans-1,2-Dichloroethene	0.17	PPBV		ND	0.17	U
GRPCE-01-IA-	(WDH) DP	cis-1,2-Dichloroethene	0.17	PPBV		ND	0.17	U
GRPCE-01-IA-	(WDH) DP	Trichloroethene	0.17	PPBV		ND	0.17	U
GRPCE-01-IA-	(WDH) DP	Tetrachloroethene	0.17	PPBV 0.0	031	J	0.031	J
GRPCE-01-IA-	(WDH) DP	Vinyl Chloride	0.44	UG/M3		ND	0.44	U
GRPCE-01-IA-	(WDH) DP	trans-1,2-Dichloroethene	0.68	UG/M3		ND	0.68	U
GRPCE-01-IA-	(WDH) DP	cis-1,2-Dichloroethene	0.68	UG/M3		ND	0.68	U
GRPCE-01-IA-	(WDH) DP	Trichloroethene	0.92	UG/M3		ND	0.92	U
GRPCE-01-IA-	(WDH) DP	Tetrachloroethene	1.2	UG/M3 0.2	21	J	0.21	J
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.28	PPBV		ND	0.28	U
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.28	PPBV		ND	0.28	U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.28	PPBV		ND	0.28	U
GRPCE-01-IA-	(Main)	Trichloroethene	0.28	PPBV		ND	0.28	U
GRPCE-01-IA-	(Main)	Tetrachloroethene	0.28	PPBV		ND	0.28	U
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.71	UG/M3		ND	0.71	U
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	1.1	UG/M3		ND	1.1	U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	1.1	UG/M3		ND	1.1	U
GRPCE-01-IA-	(Main)	Trichloroethene	1.5	UG/M3		ND	1.5	U
GRPCE-01-IA-	(Main)	Tetrachloroethene	1.9	UG/M3		ND	1.9	U
J. (1 OE 01 1/1	(IVIGIII)	. 30 40 110 100 110 110	1.0	3 3/1410		.,,,	1.0	<u> </u>

	SAMPID	COMPOUND NAME	REPLMT		RESULTS	DATAFLAGS	VAL_RESULTS	VAL_DATAFLAGS
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.17	PPBV PPBV		ND	0.17	U
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.17			ND	0.17	U
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.17	PPBV		ND	0.17	U
GRPCE-01-IA-	(Basement)	Trichloroethene	0.17	PPBV	0.40	ND	0.17	U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	0.17		0.10	J	0.10	J
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.43	UG/M3		ND	0.43	U
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.67	UG/M3		ND	0.67	U
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.67	UG/M3		ND	0.67	U
GRPCE-01-IA-	(Basement)	Trichloroethene	0.91	UG/M3		ND	0.91	U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	1.2	UG/M3	0.70	J	0.70	J
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.15	PPBV		ND	0.15	U
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.15	PPBV	0.070	J	0.070	J
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.15	PPBV		ND	0.15	U
GRPCE-01-IA-	(Basement)	Trichloroethene	0.15	PPBV		ND	0.15	U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	0.15	PPBV	0.28		0.28	
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.39	UG/M3		ND	0.39	U
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.61	UG/M3	0.28	J	0.28	J
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.61	UG/M3		ND	0.61	U
GRPCE-01-IA-	(Basement)	Trichloroethene	0.82	UG/M3		ND	0.82	U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	1.0	UG/M3	1.9		1.9	
GRPCE-01-IA-	(Carpentry)	Vinyl Chloride	0.15	PPBV		ND	0.15	U
GRPCE-01-IA-	(Carpentry)	trans-1,2-Dichloroethene	0.15	PPBV		ND	0.15	U
GRPCE-01-IA-	(Carpentry)	cis-1,2-Dichloroethene	0.15	PPBV		ND	0.15	U
GRPCE-01-IA-	(Carpentry)	Trichloroethene	0.15	PPBV		ND	0.15	U
GRPCE-01-IA-	(Carpentry)	Tetrachloroethene	0.15	PPBV		ND	0.15	U
GRPCE-01-IA-	(Carpentry)	Vinyl Chloride	0.39	UG/M3		ND	0.39	U
GRPCE-01-IA-	(Carpentry)	trans-1,2-Dichloroethene	0.60	UG/M3		ND	0.60	U
GRPCE-01-IA-	(Carpentry)	cis-1,2-Dichloroethene	0.60	UG/M3		ND	0.60	U
GRPCE-01-IA-	(Carpentry)	Trichloroethene	0.82	UG/M3		ND	0.82	U
GRPCE-01-IA-	(Carpentry)	Tetrachloroethene	1.0	UG/M3		ND	1.0	U
GRPCE-01-IA-	(Outside)	Vinyl Chloride	0.17	PPBV		ND	0.17	U
GRPCE-01-IA-	(Outside)	trans-1,2-Dichloroethene	0.17	PPBV		ND	0.17	U
GRPCE-01-IA-	(Outside)	cis-1,2-Dichloroethene	0.17	PPBV		ND	0.17	U
GRPCE-01-IA-	(Outside)	Trichloroethene	0.17	PPBV		ND	0.17	U
GRPCE-01-IA-	(Outside)	Tetrachloroethene	0.17	PPBV		ND	0.17	U
	(/							

	CLIENTSAMPID	COMPOUND NAME			RESULTS	DATAFLAGS	-	VAL_DATAFLAGS
GRPCE-01-IA	(Outside)	Vinyl Chloride	0.43	UG/M3		ND	0.43	U
GRPCE-01-IA	(Outside)	trans-1,2-Dichloroethene	0.67	UG/M3		ND	0.67	U
GRPCE-01-IA	(Outside)	cis-1,2-Dichloroethene	0.67	UG/M3		ND	0.67	U
GRPCE-01-IA	(Outside)	Trichloroethene	0.91	UG/M3		ND	0.91	U
GRPCE-01-IA	(Outside)	Tetrachloroethene	1.2	UG/M3		ND	1.2	U
GRPCE-01-IA	(Basement)	Vinyl Chloride	0.14	PPBV		ND	0.14	U
GRPCE-01-IA	(Basement)	trans-1,2-Dichloroethene	0.14	PPBV	0.24		0.24	
GRPCE-01-IA	(Basement)	cis-1,2-Dichloroethene	0.14	PPBV		ND	0.14	U
GRPCE-01-IA	(Basement)	Trichloroethene	0.14	PPBV		ND	0.14	U
GRPCE-01-IA	(Basement)	Tetrachloroethene	0.14	PPBV	0.14		0.14	
GRPCE-01-IA	(Basement)	Vinyl Chloride	0.36	UG/M3		ND	0.36	U
GRPCE-01-IA	(Basement)	trans-1,2-Dichloroethene	0.57	UG/M3	0.95		0.95	
GRPCE-01-IA	(Basement)	cis-1,2-Dichloroethene	0.57	UG/M3		ND	0.57	U
GRPCE-01-IA	(Basement)	Trichloroethene	0.77	UG/M3		ND	0.77	U
GRPCE-01-IA	(Basement)	Tetrachloroethene	0.97	UG/M3	0.99		0.99	
GRPCE-01-IA	(Main)	Vinyl Chloride	0.29	PPBV		ND	0.29	U
GRPCE-01-IA	(Main)	trans-1,2-Dichloroethene	0.29	PPBV		ND	0.29	U
GRPCE-01-IA	(Main)	cis-1,2-Dichloroethene	0.29	PPBV		ND	0.29	U
GRPCE-01-IA	(Main)	Trichloroethene	0.29	PPBV		ND	0.29	U
GRPCE-01-IA	(Main)	Tetrachloroethene	0.29	PPBV	0.16	J	0.16	J
GRPCE-01-IA	(Main)	Vinyl Chloride	0.73	UG/M3		ND	0.73	U
GRPCE-01-IA	(Main)	trans-1,2-Dichloroethene	1.1	UG/M3		ND	1.1	U
GRPCE-01-IA	(Main)	cis-1,2-Dichloroethene	1.1	UG/M3		ND	1.1	U
GRPCE-01-IA	(Main)	Trichloroethene	1.5	UG/M3		ND	1.5	U
GRPCE-01-IA	(Main)	Tetrachloroethene	1.9	UG/M3	1.1	J	1.1	J

Site Name	Grand Rapids VI ER	TDD No.	S05-0001-1605-010			
Document Tracking No.	0927D	1221121				
Data Reviewer (signature and date)	Jesaca a. Vickers July 12, 2016	Technical Reviewer (signature and date)	Hang N. Elis III 13 July 2016			
Laboratory Report No.	P1603260	Laboratory	ALS Laboratories/Simi Valley, CA			
Analyses	Volatile organic compounds (VOCs) by EPA Method TO-15					
Samples and Matrix	Thirteen air samples					
Field Duplicate Pairs	None					
Field Blanks	None					

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Y	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Within	
Criteria	Exceedance/Notes
Υ	
nitial Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/Notes
Υ	
ontinuing Calibration:	
Within	Exceedance/Notes
Criteria	
Υ	
alibration Verification:	
Within	Exceedance/Notes
Criteria	Litteedance/Notes
Υ	
lethod blanks:	
Within	Even dence /Netes
Criteria	Exceedance/Notes
Υ	

Exceedance/Notes



Field blanks:
Within

Criteria NA

Interference	Check Sam	ples (ICS)	(ICP	metals only	/):
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Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within	FXCEPGANCE/NOTES
Criteria	
NA	



Field duplicates:

Within Criteria	Exceedance/Notes
NA	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Υ	

Sample dilutions:

Within Criteria	Exceedance/Notes
	1.31x: VOCs for GRPCE-01-IA- (Main - Common)
	1.34x: VOCs for GRPCE-01-IA- (Main – Conf. Rm)
	1.51x: VOCs for GRPCE-01-IA-341Hall (Basement) and GRPCE-01-IA- (Electrical Room)
	1.63x: VOCs for GRPCE-01-IA-341Hall (Main - S)
	1.66x: VOCs for GRPCE-01-IA- (2 nd Floor – S)
	1.71x: VOCs for GRPCE-01-IA- (2 nd Floor – N)
٧	1.76x: VOCs for GRPCE-01-OA-
Y	1.78x: VOCs for GRPCE-01-IA- (Suite 4)
	2.05x: VOCs except tetrachloroethene for GRPCE-01-IA- (Basement - W)
	3.275x: VOCs for GRPCE-01-IA- (Basement - S)
	3.375x: VOCs except tetrachloroethene for GRPCE-01-IA- (Basement - N)
	5.37x: VOCs for GRPCE-01-IA- (Common)
	10.8x: tetrachloroethene for GRPCE-01-IA- (Basement - N)
	20.5x: tetrachloroethene for GRPCE-01-IA- (Basement - W)



Within Criteria	Exceedance/Notes
NA	

Second column confirmation (GC and HPLC analyses only):

Within Criteria	Exceedance/Notes
NA	

Internal Standards:

Within Criteria	Exceedance/Notes
Υ	

Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	

Tentatively identified compounds:

	, identified temperature.
Within	Evenedance/Notes
Criteria	Exceedance/Notes
NA	



System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

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:

	<u> </u>
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.



RESULTS OF ANALYSIS

Page 1 of 1

Client: CT Laboratories

AC02125

Tetrachloroethene

Client Sample ID: GRPCE-01-IA-341Hall (Main - S)

ALS Project ID: P1603260

Client Project ID: Grand Rapids Vapor Instrusion ER / 103X90260001S051605010

ALS Sample ID: P1603260-001

Test Code: EPA TO-15 Date Collected: 6/25/16

Test Code: EPA TO-15 Date Collected: 6/25/16
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 6/27/16
Analyst: Lusine Hakobyan Date Analyzed: 7/5/16

Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)

-3.39

Test Notes: Container ID:

127-18-4

Andrew Market Control of the Control

Initial Pressure (psig):

Canister Dilution Factor: 1.63

3.71

0.068

0.024

Final Pressure (psig):

0.16

Data CAS# Compound Result MRL Result MRL ppbV μg/m³ $\mu g/m^3$ ppbV Qualifier 75-01-4 Vinyl Chloride ND 0.16 U ND 0.064 L 156-60-5 trans-1,2-Dichloroethene ND 0.16 ND 0.041 cis-1,2-Dichloroethene 0.041 156-59-2 0.16 ND ND 79-01-6 Trichloroethene ND 0.16 ND 0.030

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

0 46

RESULTS OF ANALYSIS

Page 1 of 1

Client: **CT** Laboratories

SC00304

Client Sample ID: GRPCE-01-IA-341Hall (Basement) ALS Project ID: P1603260 Client Project ID: Grand Rapids Vapor Instrusion ER / 103X90260001S051605010 ALS Sample ID: P1603260-002

Test Code: **EPA TO-15** Date Collected: 6/25/16

Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 6/27/16 Analyst: Lusine Hakobyan Date Analyzed: 7/5/16

Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)

Test Notes:

Container ID:

Initial Pressure (psig): -0.29Final Pressure (psig): 7.08

Canister Dilution Factor: 1.51

CAS#	Compound	Result µg/m³	MRL μg/m³	Result ppbV	MRL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	ND	(015U)	ND	(0.059 U)	
156-60-5	trans-1,2-Dichloroethene	ND	0.15	ND	0.038	
156-59-2	cis-1,2-Dichloroethene	ND	0.15	ND	0.038	
79-01-6	Trichloroethene	ND	0.15	ND	0.028	
127-18-4	Tetrachloroethene	1.5	0.15	0.23	0.022	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

01/12/14

RESULTS OF ANALYSIS

Page 1 of 1

Client: CT Laboratories

AS00301

Client Sample ID: GRPCE-01-OA-

Client Project ID: Grand Rapids Vapor Instrusion ER / 103X90260001S051605010 ALS Sample ID: P1603260-003

Test Code: EPA TO-15 Date Collected: 6/25/16
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 7/1/16
Analyst: Lusine Hakobyan Date Analyzed: 7/5/16

Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)

Test Notes: Container ID:

Initial Pressure (psig): -4.21 Final Pressure (psig): 3.75

Canister Dilution Factor: 1.76

CAS#	Compound	Result µg/m³	MRL μg/m³	Result ppbV	MRL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	ND	(0.18)	ND	(0.069 U	
156-60-5	trans-1,2-Dichloroethene	ND	0.18	ND	0.044	
156-59-2	cis-1,2-Dichloroethene	ND	0.18	ND	0.044	
79-01-6	Trichloroethene	ND	0.18	ND	0.033	
127-18-4	Tetrachloroethene	0.26	0.18	0.038	0.026	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.



RESULTS OF ANALYSIS

Page 1 of 1

Client: CT Laboratories

Client Sample ID: GRPCE-01-IA- (2nd Floor - N)

ALS Project ID: P1603260

Client Project ID: Grand Rapids Vapor Instrusion ER / 103X90260001S051605010

ALS Sample ID: P1603260-004

Test Code: Instrument ID: EPA TO-15

Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16

Analyst: Sample Type: Lusine Hakobyan 6.0 L Silonite Canister

Test Notes:

Container ID:

AS00834

Initial Pressure (psig):

-3.97

Final Pressure (psig):

3.69

Volume(s) Analyzed:

Date Collected: 6/25/16

Date Received: 7/1/16

Date Analyzed: 7/5/16

Canister Dilution Factor: 1.71

1.00 Liter(s)

CAS#	Compound	Result µg/m³	MRL μg/m³	Result ppbV	MRL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	ND	(0.17 U	ND	/0.067 U	
156-60-5	trans-1,2-Dichloroethene	ND	0.17	ND	0.043	
156-59-2	cis-1,2-Dichloroethene	ND	0.17	ND	0.043	
79-01-6	Trichloroethene	ND	0.17	ND	0.032	
127-18-4	Tetrachloroethene	10	0.17	(1.5)	0.025	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

RESULTS OF ANALYSIS

Page 1 of 1

Client:

CT Laboratories

Client Sample ID: GRPCE-01-IA-

(2nd Floor - S)

ALS Project ID: P1603260

Client Project ID: Grand Rapids Vapor Instrusion ER / 103X90260001S051605010

ALS Sample ID: P1603260-005

Test Code:

EPA TO-15

Date Collected: 6/25/16

Instrument ID:

Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16

Date Received: 7/1/16

Analyst: Sample Type: Lusine Hakobyan

Date Analyzed: 7/5/16

Test Notes:

6.0 L Summa Canister

Volume(s) Analyzed:

1.00 Liter(s)

Container ID:

SC01742

Initial Pressure (psig):

-3.68

Final Pressure (psig):

3.64

Canister Dilution Factor: 1.66

CAS#	Compound	Result µg/m³	MRL μg/m³	Result ppbV	MRL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	ND	(0.17 U	ND	(0.065 U)	
156-60-5	trans-1,2-Dichloroethene	ND	0.17	ND	0.042	
156-59-2	cis-1,2-Dichloroethene	ND	0.17	ND	0.042	
79-01-6	Trichloroethene	_ND	0.17	ND	0.031	
127-18-4	Tetrachloroethene	(10)	0.17	1.5	0.024	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

RESULTS OF ANALYSIS

Page 1 of 1

Client: CT Laboratories

Client Sample ID: GRPCE-01-IA-1167Madison (Main - Common)

ALS Project ID: P1603260

Client Project ID: Grand Rapids Vapor Instrusion ER / 103X90260001S051605010

ALS Sample ID: P1603260-006

Test Code: EPA TO-15

EPA TO-15 Date Collected: 6/25/16
Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 7/1/16
Lusine Hakobyan Date Analyzed: 7/5/16

Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)

Test Notes:

Analyst:

Instrument ID:

Container ID: AC02085

Initial Pressure (psig): -0.60 Final Pressure (psig): 3.80

Canister Dilution Factor: 1.31

CAS#	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	ND	0.13 U	ND	/ 0.051 ()	
156-60-5	trans-1,2-Dichloroethene	ND	0.13	ND	0.033	
156-59-2	cis-1,2-Dichloroethene	ND	0.13	ND	0.033	
79-01-6	Trichloroethene	0.41	0.13	0.076	0.024	
127-18-4	Tetrachloroethene	75	0.13	11	0.019	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.



RESULTS OF ANALYSIS

Page 1 of 1

Client: CT Laboratories

Client Sample ID: GRPCE-01-IA- (Main - Conf. Rm)

ALS Project ID: P1603260

Client Project ID: Grand Rapids Vapor Instrusion ER / 103X90260001S051605010

ALS Sample ID: P1603260-007

Test Code: Instrument ID: EPA TO-15

Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16

Analyst:

Lusine Hakobyan

Sample Type:

6.0 L Silonite Canister

Test Notes:

Container ID: AS00091

Initial Pressure (psig): -0.86

Final Pressure (psig):

3.83

Volume(s) Analyzed:

Date Collected: 6/25/16

Date Received: 7/1/16

Date Analyzed: 7/5/16

Canister Dilution Factor: 1.34

1.00 Liter(s)

CAS#	Compound	Result µg/m³	MRL μg/m³	Result ppbV	MRL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	ND	(0.13 U)	ND	(0.052 U	
156-60-5	trans-1,2-Dichloroethene	0.13	0.13	0.034	0.034	
156-59-2	cis-1,2-Dichloroethene	0.44	0.13	0.11	0.034	
79-01-6	Trichloroethene	0.49	0.13	0.092	0.025	
127-18-4	Tetrachloroethene	80	0.13	12	0.020	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.



RESULTS OF ANALYSIS

Page 1 of 1

Client: CT Laboratories

Client Sample ID: GRPCE-01-IA- (Basement - S)

ALS Project ID: P1603260

Client Project ID: Grand Rapids Vapor Instrusion ER / 103X90260001S051605010

ALS Sample ID: P1603260-008

Test Code: EPA TO-15 Date Collected: 6/25/16
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 7/1/16
Analyst: Lusine Hakobyan Date Analyzed: 7/5/16

Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 0.40 Liter(s)

Test Notes:

Container ID: AC02126

Initial Pressure (psig): -0.66 Final Pressure (psig): 3.65

Canister Dilution Factor: 1.31

CAS#	Compound	Result µg/m³	MRL μg/m³	Result ppbV	MRL pnhV	Data Qualifier
75-01-4	Vinyl Chloride	ND	(0.33 U	ND	(0.13 U)	
156-60-5	trans-1,2-Dichloroethene	ND	0.33	ND	0.083 U	
156-59-2	cis-1,2-Dichloroethene	0.95	0.33	0 24	0.083	
79-01-6	Trichloroethene	1.7	0.33	0.32	0.061	
127-18-4	Tetrachloroethene	300	0.33	44	0.048	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

RESULTS OF ANALYSIS

Page 1 of 1

Client: **CT** Laboratories

Client Sample ID: GRPCE-01-IA-(Basement - N) ALS Project ID: P1603260 Client Project ID: Grand Rapids Vapor Instrusion ER / 103X90260001S051605010 ALS Sample ID: P1603260-009

Test Code: Instrument ID: **EPA TO-15**

Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16

Date Collected: 6/25/16 Date Received: 7/1/16

Analyst:

Lusine Hakobyan

Date Analyzed: 7/5 - 7/6/16

Sample Type:

6.0 L Summa Canister

Volume(s) Analyzed: 0.40 Liter(s)

Test Notes:

0.050 Liter(s)

Container ID:

SC00844

Initial Pressure (psig): -1.18 Final Pressure (psig):

3.56

0//12/16

Canister Dilution Factor: 1.35

CAS#	Compound	Result µg/m³	MRL μg/m³	Result ppbV	MRL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	ND	(0 34 U)	ND	(013 U)	
156-60-5	trans-1,2-Dichloroethene	ND	0.34	ND	0 085	
156-59-2	cis-1,2-Dichloroethene	ND	0.34	ND	0 085	
79-01-6	Trichloroethene	1.6	0.34	0.29	0.063	
127-18-4	Tetrachloroethene	340	2.7	(50)	0.40	De

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

D = The reported result is from a dilution.

RESULTS OF ANALYSIS

Page 1 of 1

Client: **CT** Laboratories

Client Sample ID: GRPCE-01-IA-(Basement - W) ALS Project ID: P1603260 Client Project ID: Grand Rapids Vapor Instrusion ER / 103X90260001S051605010 ALS Sample ID: P1603260-010

Test Code: Instrument ID:

Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16

Analyst: Sample Type: Lusine Hakobyan

Test Notes:

Container ID: AC02048

EPA TO-15

6.0 L Summa Canister

Initial Pressure (psig):

-5.75

Final Pressure (psig):

3.65

Volume(s) Analyzed:

Date Collected: 6/25/16

Date Received: 7/1/16

Date Analyzed: 7/5 - 7/6/16

Canister Dilution Factor: 2.05

1.00 Liter(s)

0.10 Liter(s)

CAS#	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	ND	(0.21 U)	ND	(0.080 U)	
156-60-5	trans-1,2-Dichloroethene	ND	021)	ND	0.052	
156-59-2	cis-1,2-Dichloroethene	ND	021	ND	0.052	
79-01-6	Trichloroethene	0.98	0.21	0.18	0.038	
127-18-4	Tetrachloroethene	220	2.1	(33)	0.30	De

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

D = The reported result is from a dilution.

RESULTS OF ANALYSIS

Page 1 of 1

Client:

CT Laboratories

Client Sample ID: GRPCE-01-IA-

(Suite 4)

ALS Project ID: P1603260

Client Project ID: Grand Rapids Vapor Instrusion ER / 103X90260001S051605010

ALS Sample ID: P1603260-011

Test Code: Instrument ID: EPA TO-15

Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16

Date Collected: 6/25/16 Date Received: 7/1/16

Analyst:

Lusine Hakobyan

Date Analyzed: 7/5/16

Sample Type:

6.0 L Silonite Canister

Volume(s) Analyzed: 1.00 Liter(s)

Test Notes:

Container ID:

AS01038

Initial Pressure (psig):

-4.22

Final Pressure (psig):

3.92

Canister Dilution Factor: 1.78

CAS#	Compound	Result µg/m³	MRL μg/m³	Result ppbV	MRL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	ND	(0.18 U)	ND	(0.070 U)	
156-60-5	trans-1,2-Dichloroethene	ND	0.18	ND	0.045	
156-59-2	cis-1,2-Dichloroethene	ND	0.18	ND	0.045	
79-01-6	Trichloroethene	ND	0.18	ND	0.033	
127-18-4	Tetrachloroethene	0.50	0.18	0.073	0.026	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.



RESULTS OF ANALYSIS

Page 1 of 1

Client:

CT Laboratories

Client Sample ID: GRPCE-01-IA-

(Common)

ALS Project ID: P1603260

Client Project ID: Grand Rapids Vapor Instrusion ER / 103X90260001S051605010

ALS Sample ID: P1603260-012

Test Code: Instrument ID: **EPA TO-15**

Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16

Date Collected: 6/25/16 Date Received: 7/1/16

Analyst:

Lusine Hakobyan

Date Analyzed: 7/6/16

Sample Type:

6.0 L Silonite Canister

Volume(s) Analyzed:

0.50 Liter(s)

Test Notes:

Container ID:

AS01131

Initial Pressure (psig):

-4.44

Final Pressure (psig):

3.68

Canister Dilution Factor: 1.79

CAS#	Compound	Result µg/m³	MRL ug/m³	Result ppbV	MRL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	ND	(0.36 U)	ND	(0.14 U)	-111-22 1030
156-60-5	trans-1,2-Dichloroethene	ND	0.36	ND	0.090	
156-59-2	cis-1,2-Dichloroethene	ND	0.36	ND	0.090	
79-01-6	Trichloroethene	ND	0 36	ND	0.067	
127-18-4	Tetrachloroethene	0.41	0.36	0.060	0.053	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

RESULTS OF ANALYSIS

Page 1 of 1

Client: CT Laboratories

Client Sample ID: GRPCE-01-IA- (Electrical Room)

ALS Project ID: P1603260

Client Project ID: Grand Rapids Vapor Instrusion ER / 103X90260001S051605010

ALS Sample ID: P1603260-013

Test Code: Instrument ID: EPA TO-15

Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16

Analyst: Sample Type: Lusine Hakobyan 6.0 L Summa Canister

Test Notes:

Container ID:

AC01912

Initial Pressure (psig): -2

-2.33

Final Pressure (psig):

3.93

Volume(s) Analyzed:

Date Collected: 6/25/16

Date Received: 7/1/16

Date Analyzed: 7/5/16

Canister Dilution Factor: 1.51

1.00 Liter(s)

CAS#	Compound	Result μg/m³	MRL μg/m³	Result ppbV	MRL pphV	Data Qualifier
75-01-4	Vinyl Chloride	ND	(0 15 U	ND	(0.059 U	
156-60-5	trans-1,2-Dichloroethene	ND	0.15	ND	0.038	
156-59-2	cis-1,2-Dichloroethene	ND	0.15	ND	0.038	
79-01-6	Trichloroethene	ND	0.15	ND	0.028	
127-18-4	Tetrachloroethene	0.41	0.15	0 060	0.022	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

Site Name	Grand Rapids VI ER	TDD No.	S05-0001-1605-010
Document Tracking No.	0927E	IDD NO.	303-0001-1603-010
Data Reviewer (signature and date)	Jesaca a. Vickers July 12, 2016	Technical Reviewer (signature and date)	Hang N. Elis III 13 July 2016
Laboratory Report No.	P1603338	Laboratory	ALS Laboratories/Simi Valley, CA
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15	
Samples and Matrix	Seven air samples		
Field Duplicate Pairs	None		
Field Blanks	None		

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection of results was required for this data set. The data is usable as qualified based on the exceedances discussed in this validation.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrument Performance Checks:

/ithin riteria	Exceedance/Notes
Υ	

Initial Calibration:

Within Criteria	Exceedance/Notes
N	The percent relative standard deviation for trans-1,2-dichloroethene was above the acceptance criteria; therefore the associated non-detect results were qualified as estimated (UJ).

Continuing Calibration:

Within Criteria	Exceedance/Notes
Υ	

Calibration Verification:

Within Criteria	Exceedance/Notes
Υ	

Method blanks:

Within Criteria	Exceedance/Notes
Υ	

Field blanks:

Within Criteria	Exceedance/Notes
NA	



Interference	Check Sam	ples (ICS)	(ICP	metals only	/):
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Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within	Exceedance/Notes
Criteria	Exceedance/ Notes
NA	



Field duplicates:

Within Criteria	Exceedance/Notes
NA	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Υ	

Sample dilutions:

Within Criteria		Exceedance/Notes
	1.28x: VOCs for GRPCE-01-IA-	(Basement)
	1.63x: VOCs for GRPCE-01-IA-	(Basement)
V	1.66x: VOCs for GRPCE-01-IA-	
Ť	1.70x: VOCs for GRPCE-01-IA-	and GRPCE-01-IA- (Main)
	1.79x: VOCs for GRPCE-01-IA-	(Main)
	1.80x: VOCs for GRPCE-01-IA-	(Main)

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
Υ	

Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	

Tentatively identified compounds:

	,
Within	Evenedance/Notes
Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within	Exceedance/Notes
Criteria	
Υ	

Other [specify]:

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.



RESULTS OF ANALYSIS

Page 1 of 1

Client: **CT** Laboratories

Client Sample ID: GRPCE-01-IA-ALS Project ID: P1603338 Client Project ID: Grand Rapids Vapor Instrusion E.R. / 103X90260001S051605010 ALS Sample ID: P1603338-001

Test Code:

EPA TO-15

Date Collected: 6/24/16 Date Received: 7/1/16

Instrument ID:

Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9

Analyst: Sample Type: Simon Cao

Date Analyzed: 7/5/16

6.0 L Silonite Canister

Volume(s) Analyzed:

1.00 Liter(s)

Test Notes:

Container ID:

AS00914

Initial Pressure (psig):

-3.55

Final Pressure (psig):

3.76

Canister Dilution Factor: 1.66

CAS#	Compound	Result µg/m³	MRL μg/m³	Result ppbV	MRL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	ND	(0 17 U	ND	(0.065 U	
156-60-5	trans-1,2-Dichloroethene	ND	01705	ND	0.042 05)
156-59-2	cis-1,2-Dichloroethene	ND	0 17 U	ND	0.042	/
79-01-6	Trichloroethene	ND	0170	ND	0.031	
127-18-4	Tetrachloroethene	78	0.17	12	0.024	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.



RESULTS OF ANALYSIS

Page 1 of 1

Client: **CT** Laboratories

Client Sample ID: GRPCE-01-1A-(Main) ALS Project ID: P1603338 Client Project ID: Grand Rapids Vapor Instrusion E.R. / 103X90260001S051605010 ALS Sample ID: P1603338-002

Test Code: Instrument ID: EPA TO-15

Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9

Date Received: 7/1/16

Date Collected: 6/24/16

Analyst:

Simon Cao

Date Analyzed: 7/5/16

Sample Type:

6.0 L Summa Canister

Volume(s) Analyzed: 1.00 Liter(s)

Test Notes:

Container ID: SC01608

Initial Pressure (psig):

-4.44

Final Pressure (psig): 3.72

Canister Dilution Factor: 1.80

CAS#	Compound	Result µg/m³	MRL μg/m³	Result ppbV	MRL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	ND	TO 18 U	ND	/0 070 U	1
156-60-5	trans-1,2-Dichloroethene	ND	0.18 UJ	ND	0 045 UJ)
156-59-2	cis-1,2-Dichloroethene	ND	0.18 U	ND	0 045 U	
79-01-6	Trichloroethene	ND	0.18	ND	0 034	
127-18-4	Tetrachloroethene	(1.1)	0.18	(0.16)	0.027	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

RESULTS OF ANALYSIS

Page 1 of 1

Client: CT Laboratories

Client Sample ID: GRPCE-01-IA
Client Project ID: Grand Rapids Vapor Instrusion E.R. / 103X90260001S051605010

ALS Project ID: P1603338

ALS Sample ID: P1603338-004

Test Code: Instrument ID: EPA TO-15

Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9

Simon Cao 6.0 L Silonite Canister

Sample Type:

Analyst:

Test Notes: Container ID:

s:

SSC00200

Initial Pressure (psig):

-3.68

Final Pressure (psig):

4.08

Volume(s) Analyzed:

Date Collected: 6/24/16

Date Received: 7/1/16

Date Analyzed: 7/5/16

Canister Dilution Factor: 1.70

1.00 Liter(s)

CAS#	Compound	Result µg/m³	MRL μg/m³	Result ppbV	MRL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	ND	(0 17 U	ND	/0.067 U	
156-60-5	trans-1,2-Dichloroethene	ND	1017 UJ	ND	0.043 0丁	
156-59-2	cis-1,2-Dichloroethene	ND	0 17 U	ND	0.043 U	
79-01-6	Trichloroethene	ND	0 17	ND	0.032	
127-18-4	Tetrachloroethene	ND	017	ND	0.025	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.



RESULTS OF ANALYSIS

Page 1 of 1

Client: CT Laboratories

Client Sample ID: GRPCE-01-IA- (Main)

Client Project ID: Grand Rapids Vapor Instrusion E.R. / 103X90260001S051605010

ALS Project ID: P1603338

ALS Sample ID: P1603338-005

Test Code: Instrument ID: EPA TO-15

Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9

Analyst: Simon Cao

Sample Type: 6.0 L Silonite Canister

Test Notes:

Container ID:

D: AS00550

Initial Pressure (psig): -3

-3.84

Final Pressure (psig):

3.78

Volume(s) Analyzed:

Date Collected: 6/24/16

Date Received: 7/1/16

Date Analyzed: 7/5/16

Canister Dilution Factor: 1.70

1.00 Liter(s)

CAS#	Compound	Result µg/m³	MRL μg/m³	Result ppbV	MRL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	ND	(0.17 U	ND	Ø.067 U	
156-60-5	trans-1,2-Dichloroethene	ND	0.17 UJ	ND	0.043 UJ	
156-59-2	cis-1,2-Dichloroethene	ND	0.17	ND	0.043 U	
79-01-6	Trichloroethene	ND	0.17	ND	0.032	
127-18-4	Tetrachloroethene	ND	0.17	ND	0.025	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.



RESULTS OF ANALYSIS

Page 1 of 1

Client: CT Laboratories

Client Sample ID: GRPCE-01-IA- (Basement)

Client Project ID: Grand Rapids Vapor Instrusion E.R. / 103X90260001S051605010

ALS Project ID: P1603338

ALS Sample ID: P1603338-006

Test Code: Instrument ID: EPA TO-15

Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9

Simon Cao 6.0 L Silonite Canister

Sample Type: Test Notes:

Analyst:

Container ID: AS00532

Initial Pressure (psig): -3.48 Fina

Final Pressure (psig): 3.59

Canister Dilution Factor: 1.63

1.00 Liter(s)

Date Collected: 6/24/16

Date Received: 7/1/16

Date Analyzed: 7/5/16

Volume(s) Analyzed:

CAS#	Compound	Result µg/m³	MRL μg/m³	Result ppbV	MRL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	ND	(016 U)	ND	(0.064 U	
156-60-5	trans-1,2-Dichloroethene	ND	0.16 UJ	ND	0.041 レブ /	
156-59-2	cis-1,2-Dichloroethene	ND	0.16 U	ND	0.041 0	
79-01-6	Trichloroethene	ND	0.16	_ ND	0.030 U	
127-18-4	Tetrachloroethene	9.6	0.16	(1.4)	0.024	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.



RESULTS OF ANALYSIS

Page 1 of 1

Client: CT Laboratories

Client Sample ID: GRPCE-01-IA- (Main)

Client Project ID: Grand Rapids Vapor Instrusion E.R. / 103X90260001S051605010

ALS Project ID: P1603338

ALS Sample ID: P1603338-007

Test Code: Instrument ID: EPA TO-15

Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9

Analyst:

Simon Cao

Sample Type: Test Notes: 6.0 L Silonite Canister

0.0 L Shonke Can

Container ID: AS00643

Initial Pressure (psig):

-4.28

Final Pressure (psig):

3.90

Volume(s) Analyzed:

Date Collected: 6/24/16

Date Received: 7/1/16

Date Analyzed: 7/5/16

Canister Dilution Factor: 1.79

1.00 Liter(s)

CAS#	Compound	Result μg/m³	MRL μg/m³	Result ppbV	MRL pphV	Data Qualifier
75-01-4	Vinyl Chloride	ND	/0.18 U)	ND	/ 0.070 U	
156-60-5	trans-1,2-Dichloroethene	ND	0.18 UJ	ND	0.045 UJ	
156-59-2	cis-1,2-Dichloroethene	ND	0.18 U	ND	0.045 D	
79-01-6	Trichloroethene	ND	0.18	ND	0.033	
127-18-4	Tetrachloroethene	0.80	0.18	0 12	0.026	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

RESULTS OF ANALYSIS

Page 1 of 1

Client: **CT** Laboratories

Client Sample ID: GRPCE-01-IA-(Basement) ALS Project ID: P1603338 Client Project ID: Grand Rapids Vapor Instrusion E.R. / 103X90260001S051605010 ALS Sample ID: P1603338-008

Test Code: Instrument ID: EPA TO-15

Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9

Date Collected: 6/24/16 Date Received: 7/1/16

Analyst:

Simon Cao

Date Analyzed: 7/5/16

Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)

Test Notes:

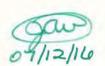
Container ID: SSC00180

> Initial Pressure (psig): Final Pressure (psig): -0.473.53

> > Canister Dilution Factor: 1.28

CAS#	Compound	Result µg/m³	MRL μg/m³	Result ppbV	MRL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	ND	(0.13 U)	ND	0.050 U	
156-60-5	trans-1,2-Dichloroethene	ND	0.13 ひ丁	ND	/ 0.032 UJ	
156-59-2	cis-1,2-Dichloroethene	ND	0.13	ND	0.032	
79-01-6	Trichloroethene	ND	0.13	ND	0.024	
127-18-4	Tetrachloroethene	4.3	0.13	0.63	0.019	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.





July 15, 2016

Betsy Nightingale On-Scene Coordinator U.S. Environmental Protection Agency Region 5 9311 Groh Road Grosse Ile, MI 48138-1697

Subject: Data Validation Report

Grand Rapids VI ER

EPA Contract No. EP-S5-13-01

Technical Direction Document No. S05-0001-1605-010

Document Tracking No. 0943

Dear Ms. Nightingale:

Tetra Tech Inc. (Tetra Tech) is submitting this Data Validation Report for eight air samples (including a field duplicate) collected at the Grand Rapids VI ER site. The samples were collected July 6, 2016 and were analyzed for volatile organic compounds by Bureau Veritas Laboratories. Tetra Tech received the final data on July 10, 2016.

Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines* (NFG) for Superfund Organic Methods Data Review (August 2014).

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

If you have any questions regarding this Data Validation Report, please call me at (662) 681-5727.

Sincerely,

Jessica A. Vickers START Chemist

Enclosure

cc: Kevin Scott, Tetra Tech Program Manager

Michael Browning, Tetra Tech Project Manager

TDD File

Jesaca a Vickers

ATTACHMENT 1 DATA VALIDATION REPORT SDG 16070362

Site Name	Grand Rapids VI ER		TDD No.	S05-0001-1605-010
Document Tracking No.	0943		TOD NO.	303-0001-1603-010
Data Reviewer (signature and date)	Jesaca a. Vickers July 15, 2016		QC Reviewer (signature and date)	John Perg. 15 July 2016
Laboratory Report No.	16070362		Laboratory	Bureau Veritas/Novi, MI
Analyses	Volatile organic compounds (VOCs) by EPA	M	lethod TO-15	
Samples and Matrix	Eight air samples (including a field duplicate)			
Field Duplicate Pairs	GRPCE-09-IA- (1)/GRPCE-09-IA- (1)-DP			
Field Blanks	None			

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Y	
Initial Calibration:	
Within	Exceedance/Notes
Criteria	Executive y Notes
Υ	
Continuing Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Υ	
Calibration Verification:	
Within	Exceedance/Notes
Criteria	Exact durine, Notes
NA	
Method blanks:	
Within	Exceedance/Notes
Criteria	Endecadinely Notes
Υ	

Exceedance/Notes



Within

Criteria NA

Interference	Check Sam	ples (ICS)	(ICP	metals only	/):
--------------	-----------	------------	------	-------------	-----

Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within	Exceedance/Notes
Criteria	Exceedance/ Notes
NA	



Field duplicates:

Within Criteria	Exceedance/Notes
Υ	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Υ	

Sample dilutions:

Within Criteria	Exceedance/Notes
V	Sample GRPCE-08-IA- (BASEMENT) was analyzed at a 2-fold dilution for VOCs. Samples GRPCE-08-IA- (MAIN), GRPCE-08-IA- GRPCE-09-IA- (1)-DP, GRPCE-09-IA- (2), and GRPCE-12-OA- were analyzed at 1.98-fold dilutions for VOCs.
Y	Sample GRPCE-08-IA- was analyzed at a 2-fold dilution for VOCs except trans-1,2-dichloroethene, which was analyzed at a 10-fold dilution. Sample GRPCE-09-IA- (1) was analyzed at a 1.99-fold dilution for VOCs.

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
Υ	

Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	

Tentatively identified compounds:

	,
Within	Evenedance/Notes
Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within	Exceedance/Notes
Criteria	
Υ	

Other [specify]:

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.





Date: 10-Jul-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16070362

Sample Identification GRPCE-08-1A-

(BASEMENT)

Date Sampled: 7/6/2016

Lab Number:

007A

Date Received: 7/7/2016

Sample Type:

Air, Can

Analysis Date: 7/7/2016

Test Method:

EPA Method TO-15A

Analyst: JTF

Initial Pressure:

-8.0 psig

Final Pressure:

-1.6 psig

Canister ID:

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.048 0.32U ND 0.012 0.08 U 2
127-18-4	Tetrachloroethene	4.7 0.075 0.54 0.70 0.011 0.08 2
156-60-5	trans-1,2-Dichloroethcne	180 0.039 0.32 44 0.0098 0.08 2
79-01-6	Trichloroethene	0.32 J 0.042 0.43 0.060 J 0.0078 0.08 2 3
75-01-4	Vinyl Chloride	ND 0.046 (0.200) AID 0.018 (0.080)2



ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J: Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T: Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 10-Jul-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16070362

Sample Identification GRPCE-08-IA-

(MAIN) Date Sampled: 7/6/2016

Lab Number: 006A

Date Campieu. 770/201

Sample Type: Air, Can

Date Received: 7/7/2016
Analysis Date: 7/7/2016

Test Method:

Canister ID:

EPA Method TO-15A Analyst: JTF

Initial Pressure: -7.8 psig
Final Pressure: -1.3 psig

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Q	ual
156-59-2	cis-1,2-Dichloroethene	ND 0.048 (0.310) ND 0.012 (0.0790)1.98	
127-18-4	Tetrachloroethene	1.5 0.068 0.54 0.22 0.01 0.079 1.98	
156-60-5	trans-1.2-Dichloroethene	6.7 0.038 0.31 1.7 0.0097 0.079 1.98	
79-01-6	Trichloroethene	0.213 0.041 0.42 0.040 0.0077 0.079 1.98	8
75-01-4	Vinyl Chloride	ND 0.043 0.200 ND 0.017 0.0790 1.98	



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 10-Jul-16

Date Sampled: 7/6/2016

Date Received: 7/7/2016

Analysis Date: 7/7/2016

Analyst: JTF

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16070362

Sample Identification GRPCE-08-IA-

Lab Number: 005A

Sample Type: Air, Can

Test Method:

EPA Method TO-15A

Initial Pressure: Final Pressure: -1.6 psig

-8.0 psig

Canister ID:

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF (Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.048 0.320 ND 0.012 0.080 2	
127-18-4	Tetrachlorocthene	7.6 0.075 0.54 1.1 0.011 0.08 2	
156-60-5	trans-1,2-Dichlorocthene	230 0.19 1.6 58 0.049 0.4 10	
79-01-6	Trichloroethene	0.11 3 0.042 0.43 0.020 3 0.0078 0.08 2	Y
75-01-4	Vinyl Chloride	ND 0.046 (0.20U) ND 0.018 (0.08U) 2	



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J: Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16070362

Sample Identification GRPCE-08-IA-

Lab Number:

Client:

004A

Sample Type:

Air, Can

Test Method:

EPA Method TO-15A

Initial Pressure:

-7.8 psig

Final Pressure:

-1.3 psig

Canister ID:

14547

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qu
156-59-2	cis-1,2-Dichloroethene	ND 0.048 (0.311) ND 0.012 (0.079 U).98
127-18-4	Tetrachlorouthene	2.3 0.068 0.54 0.34 0.01 0.079 1.98
156-60-5	trans-1,2-Dichloroethene	14 0.038 0.31 3.4 0.0097 0.079 1.98
79-01-6	Trichloroethene	ND 0.041 0.42 U NB 0 0077 0.079 1.98
75-01-4	Vinyl Chloride	ND 0.043 0.200 ND 0.017 0.079 0.98



Date: 10-Jul-16

Date Sampled: 7/6/2016

Date Received: 7/7/2016

Analysis Date: 7/7/2016

Analyst: JTF

-, Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 10-Jul-16

Client: **TETRA TECH**

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16070362

Sample Identification GRPCE-09-IA-

Date Sampled: 7/6/2016

Lab Number: 001A

Date Received: 7/7/2016

Sample Type: Air, Can Analysis Date: 7/7/2016

Test Method:

EPA Method TO-15A

Analyst: JTF

Initial Pressure:

-7.8 psig

Final Pressure:

-1.3 psig

Canister ID:

CAS#	Analyte		1DL g/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	0.24 3	0.048	0.32	0.0603	0 012	0.08	1.99	te.
127-18-4	Tetrachlorocthene	2.0	0.075	0.54	0.30	0.011	0.08	1.99	
156-60-5	trans-1,2-Dichloroethene	5.8	0.039	0.32	1.5	0.0098	0.08	1.99	
79-01-6	Trichloroethene	0.43 丁	0.042	0.43	0 080 3	0 0078	0.08	1.99	+
75-01-4	Vinyl Chloride	N D +	0.046	1.20) ND	0 018	0.080).99	



^{-,} Information not available or not applicable.

RL: Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R: RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 10-Jul-16

Client: **TETRA TECH**

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16070362

Sample Identification GRPCE-09-IA-

Date Sampled: 7/6/2016

Lab Number: 002A Date Received: 7/7/2016

Sample Type: Air, Can Analysis Date: 7/7/2016

Test Method:

EPA Method TO-15A

Analyst: JTF

Initial Pressure:

-8 psig

Final Pressure:

-1.7 psig

Canister ID:

14013

CAS#	Analyte	Rcsults MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.048 (0.310) ND 0.012 (0.0790).98
127-18-4	Tetrachloroethene	1.9 0.068 0.54 0.28 0.01 0.079 1.98
156-60-5	trans-1,2-Dichloroethene	6.6 0.038 0.31 1.7 0.0097 0.079 1.98
79-01-6	Trichloroethene	0.11 J 0.041 0.42 0.020 J 0 0077 0.079 1.98 3
75-01-4	Vinyl Chloride	ND 0.043 0.200 ND 0.017 0.079U 1.98



-, Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

J: Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R: RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 10-Jul-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16070362

Sample Identification GRPCE-09-IA-

Date Sampled: 7/6/2016

Lab Number:

003A

Date Received: 7/7/2016

Sample Type:

Air, Can

Analysis Date: 7/7/2016

Test Method:

EPA Method TO-15A

Analyst: JTF

Initial Pressure:

-7.8 psig

Final Pressure:

-1.3 psig

Canister ID:

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qua
156-59-2	cis-1,2-Dichloroethene	ND 0.048 0.31 ND 0.012 (0.079 0.098
127-18-4	Tetrachloroethene	2.0 0.068 0.54 0.30 0.01 0.079 1.98
156-60-5	trans-1,2-Dichloroethene	3.0 0.038 0.31 0.75 0.0097 0.079 1.98
79-01-6	Trichloroethene	ND 0.041 0.420 ND 0.0077 (0.0790),98
75-01-4	Vinyl Chloride	ND 0.043 0.20 ND 0.017 0.079 198



^{-:} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 10-Jul-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16070362

Sample Identification GRPCE-12-OA-

GRPCE-12-OA-Date Sampled: 7/6/2016

Lab Number: 008A Date Received: 7/7/2016
Sample Type: Air, Can Analysis Date: 7/8/2016

Test Method: EPA Method TO-15A Analyst: JTF

Initial Pressure: -6.8 psig
Final Pressure: 0.7 psig

Canister ID: 13931

Results MDL RL Results MDL RL

(1921/1921) (1921/1922) (19

CAS#	Analyte	(ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.048 0.310 ND 0.012 0.0790 198
127-18-4	Tetrachloroethene	1.1 0.068 0.54 0.16 0.01 0.079 1.98
156-60-5	trans-1.2-Dichloroethene	ND 0.038 (0.310) ND 0.0097 (0.0790 1.98
79-01-6	Trichloroethene	0.11 0.041 0.42 0.020 0.0077 0.079 1.98
75-01-4	Vinyl Chloride	AID 0.043 (0.200) ND 0.017 (0.0790).98



J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



July 18, 2016

Betsy Nightingale On-Scene Coordinator U.S. Environmental Protection Agency Region 5 9311 Groh Road Grosse Ile, MI 48138-1697

Subject: Data Validation Report

Grand Rapids VI ER

EPA Contract No. EP-S5-13-01

Technical Direction Document No. S05-0001-1605-010

Document Tracking No. 0951

Dear Ms. Nightingale:

Tetra Tech Inc. (Tetra Tech) is submitting this Data Validation Report for seven air samples collected at the Grand Rapids VI ER site. The samples were collected July 8 and 9, 2016 and were analyzed for volatile organic compounds by Bureau Veritas Laboratories. Tetra Tech received the final data on July 18, 2016.

Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines* (NFG) for Superfund Organic Methods Data Review (August 2014).

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

If you have any questions regarding this Data Validation Report, please call me at (662) 681-5727.

Sincerely,

Jessica A. Vickers START Chemist

Enclosure

cc: Kevin Scott, Tetra Tech Program Manager

Michael Browning, Tetra Tech Project Manager

TDD File

Jesaca a Vickers

ATTACHMENT 1 DATA VALIDATION REPORT SDG 16070541

Site Name	Grand Rapids VI ER	TDD No.	COT 0001 160F 010
Document Tracking No.	0951	1221101	S05-0001-1605-010
Data Reviewer (signature and date)	Jesaca a. Vickers July 18, 2016	Technical Reviewer (signature and date)	Hang N. Elis III 18 July 2016
Laboratory Report No.	16070541	Laboratory	Bureau Veritas/Novi, MI
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15	
Samples and Matrix	Seven air samples		
Field Duplicate Pairs	None		
Field Blanks	None		

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	Sample GRPCE-13-OA- was incorrectly logged in as GRPCE-13-OA- by the laboratory. The sample identifier was manually corrected in the attachment to this checklist.

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Y	
Initial Calibration:	
Within	Exceedance/Notes
Criteria	Executive y Notes
Υ	
Continuing Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Υ	
Calibration Verification:	
Within	Exceedance/Notes
Criteria	Exact durine, Notes
NA	
Method blanks:	
Within	Exceedance/Notes
Criteria	Endecadinely Notes
Υ	

Exceedance/Notes



Within

Criteria NA

Interference	Check Sam	ples (ICS)	(ICP	metals only	/):
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Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within	Exceedance/Notes
Criteria	Exceedance/ Notes
NA	



Field duplicates:

Within Criteria	Exceedance/Notes
NA	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Υ	

Sample dilutions:

Within Criteria	Exceedance/Notes	
Υ	Sample GRPCE-09-IA-	(BASEMENT) was analyzed at a 5-fold dilution for trans-1,2-dichloroethene.

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
Y	



Target analyte identification	Target	analy	vte i	iden	tifica	ition
-------------------------------	--------	-------	-------	------	--------	-------

Within Criteria	Exceedance/Notes
Υ	
nalyte qua	ntitation and MDLs/RLs:
Within	
Criteria	Exceedance/Notes

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

other [specify].		
Within	Evenedance/Notes	
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.





Trichloroethene

Vinyl Chloride

Date: 12-Jul-16

Client:	TETRA TECH			
Project:	GRAND RAPIDS EMERGENCY RESPONSE	W	ork Order No:	16070541
Sample Identi	fication GRPCE-01-JA-CONEXHS20		Date Sampled:	7/9/2016
Lab Number:	007A		Date Received:	7/11/2016
Sample Type:	Air, Can		Analysis Date:	7/12/2016
Test Method:	EPA Method TO-15A		Analyst:	DRS
Initial Pressur	re: -1.72 psig			
Final Pressure	e: -1.72 psig			
Canister ID:	14205			
CAS#	Analyte	Results MDL RL (ug/m³) (ug/m³)	Results MDL (ppbV)	RL (ppbV) DF Qual
156-59-2 127-18-4 156-60-5	cis-1,2-Dichloroethene Tetrachloroethene trans-1,2-Dichloroethene	0.024 0.161 0.068 0 036 0.27 0.040 0 019 0.16	0.010 0 0061 0.010 0 0053 0.010 0 0049	0.04 1

0.054 3 0 021

0 022



0.10 ND 0.0088 (0.04 U) 1

0.21 0.010 0 0039

General Notes and Qualifiers:

79-01-6

75-01-4

-: Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



-2.27 psig

14545

Final Pressure:

Canister ID:

Date: 12-Jul-16

Client:	TETRA TECH		
Project:	GRAND RAPIDS EMERGENCY RESPONSE	Work Order No:	16070541
Sample Identificat	ion GRPCE-09-IA- (BASEMENT)	Date Sampled:	7/8/2016
Lab Number:	005A	Date Received:	7/11/2016
Sample Type:	Air, Can	Analysis Date:	7/12/2016
Test Method:	EPA Method TO-15A	Analyst:	DRS
Initial Pressure:	-2.27 psig		

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (pphV)	RL (ppbV)	DF	Oual
156-59-2	cis-1,2-Dichloroethene	0.12 3	_	0.16	0.030 J	-	0.04	1	Je.
127-18-4	Tetrachloroethene	6.0	0.036		0.88	0.0053	0.04	1	
156-60-5	trans-1,2-Dichlorocthene	240	0.099	0.79	61	0.025	0.2	5	
79-01-6	Trichloroethene	0.32	0.021	0.21	0.060	0.0039	0.04	1	
75-01-4	Vinyl Chloride	GI	0.022	(0.10	GH+ (N	0 0088	0 04 U)1	



ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL, Method Detection Limit

B; Analyte detected in the associated Method Blank

S, Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve

^{--.} Information not available or not applicable.



Date: 12-Jul-16

Date Sampled: 7/8/2016

Date Received: 7/11/2016

Analysis Date: 7/12/2016

Analyst: DRS

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16070541

Sample Identification GRPCE-09-IA-(MAIN)

Lab Number: 004A

Sample Type: Air, Can

EPA Method TO-15A Test Method:

Initial Pressure: -1.56 psig Final Pressure: -1.56 psig

Canister ID. 14110

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	0.040 3	0.024	0.16	0.0103	0.0061	0.04	1	10
127-18-4	Tetrachloroethene	2.1	0.036	0.27	0.31	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	7.7	0.019	0.16	1.9	0.0049	0.04	1	
79-01-6	Trichloroethene	0.16 3	0.021	0.21	0.030 3	0.0039	0.04	1	1
75-01-4	Vinyl Chloride	-NB	0.022	0.10	U) ND	0 0088	0.04 U	11	



^{-,} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r T; Tentatively Identified Compound (TIC)

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

E; Value exceeds linear range of calibration curve



Date: 12-Jul-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16070541

Sample Identification GRPCE-09-IA-

(MAIN)

Date Sampled: 7/8/2016

Lab Number:

003A

Date Received: 7/11/2016

Sample Type:

Air, Can

Analysis Date: 7/12/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-1.9 psig

Final Pressure:

-1.9 psig

Canister ID:

14072

CAS#	Analyte		MDL ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	0.040 3	0 024	0.16	0.010	0061	0.04	1	+e
127-18-4	Tetrachloroethene	4.3	0.036	0.27	0.64	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	28	0.019	0.16	7.1	0.0049	0.04	1	
79-01-6	Trichloroethene	0.11 3	0 021	0.21	0.020 3	0 0039	0.04	1	40
75-01-4	Vinyl Chloride	AM	0 022	0.10	U) ND	0 0088	0:04U	71	



ND; Less than the indicated limit of detection (LOD)

RL, Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

^{-;} Information not available or not applicable.

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T: Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 12-Jul-16

Date Sampled: 7/8/2016

Date Received: 7/11/2016

Analysis Date: 7/12/2016

Analyst: DRS

Client: TETRA TECH

GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16070541 Project:

Sample Identification GRPCE-10-IA-

001A

Lab Number:

Sample Type: Air, Can

Test Method: EPA Method TO-15A

Initial Pressure: -1.71 psig Final Pressure: -1.71 psig Canister ID: 14015

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m²) (ug/m²) (ug/m²) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 0.16U ND 0.0061 0.04U
127-18-4	Tetrachloroethene	2.6 0.036 0.27 0.38 0.0053 0.04
156-60-5	trans-1,2-Dichloroethene	5.9 0.019 0.16 1.5 0.0049 0.04 1
79-01-6	Trichloroethene	0.054 5 0 021 0.21 0.010 5 0.0039 0.04 1
75-01-4	Vinyl Chloride	ND 0.022 (0.10U) ND 0.0088 (0.04U)1



ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

^{-:} Information not available or not applicable.

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 12-Jul-16

Date Sampled: 7/8/2016

Date Received: 7/11/2016

Analysis Date: 7/12/2016

Analyst: DRS

Client: TETRA TECH

GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16070541 Project:

Sample Identification GRPCE-10-IA-

002A Lab Number:

Sample Type: Air, Can

Test Method: EPA Method TO-15A

Initial Pressure:

-1.94 psig -1.94 psig

Final Pressure: Canister ID:

14620

CAS#	Analyte		MDL ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethenc	(0 040 J	0.024	0.16	0.0103	0.0061	0.04	1	Je.
127-18-4	Tetrachloroethene	4.7	0.036	0.27	0.70	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	16	0.019	0.16	4.0	0.0049	0.04	1	
79-01-6	Trichloroethene	0115	0 021	0.21	0.0203	0.0039	0.04	1	10
75-01-4	Vinyl Chloride	NB-	0.022	(0.10	U) NB	-0 0088	0.040	1	



-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E. Value exceeds linear range of calibration curve



Date: 12-Jul-16

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16070541

Sample Identification GRPCE-13-8A

006A

Date Sampled: 7/8/2016

Lab Number:

Date Received: 7/11/2016

Sample Type:

Air, Can

Analysis Date: 7/12/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure: Final Pressure:

-2.19 psig -2.19 psig

Canister ID:

14049

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	NB 0.024 (0.16) NB 0.0061 (0.04)
127-18-4	Tetrachloroethene	0.47 0.036 0.27 0.070 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	0.079 3 0.019 0.16 0.020 3 0.0049 0.04 1 +
79-01-6	Trichloroethene	0.054 3 0.021 0.21 0.010 3 0.0039 0.04 1
75-01-4	Vinyl Chloride	NB 0.022 (0.10 U) NB 0.0088 (0.04 U)



RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated \boldsymbol{r}

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



July 19, 2016

Betsy Nightingale On-Scene Coordinator U.S. Environmental Protection Agency Region 5 9311 Groh Road Grosse Ile, MI 48138-1697

Subject: Data Validation Report

Grand Rapids VI ER

EPA Contract No. EP-S5-13-01

Technical Direction Document No. S05-0001-1605-010

Document Tracking No. 0954

Dear Ms. Nightingale:

Tetra Tech Inc. (Tetra Tech) is submitting these Data Validation Reports for twenty air samples (including three field duplicates) collected at the Grand Rapids VI ER site. The samples were collected July 11 through 14, 2016 and were analyzed for volatile organic compounds by Bureau Veritas Laboratories. Tetra Tech received the final data on July 18, 2016.

Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines* (NFG) for Superfund Organic Methods Data Review (August 2014).

No rejection of results was required for this data set. The data is usable as qualified based on the findings of this validation.

If you have any questions regarding these Data Validation Reports, please call me at (662) 681-5727.

Sincerely,

Jessica A. Vickers START Chemist

Enclosure

cc: Kevin Scott, Tetra Tech Program Manager

Michael Browning, Tetra Tech Project Manager

TDD File

Jesaca a Vickers

ATTACHMENT 1

DATA VALIDATION REPORTS SDGS 16070647 AND 16070786

Site Name	Grand Rapids VI ER	TDD No.	S05-0001-1605-010
Document Tracking No.	0954A		
Data Reviewer (signature and date)	Jeoaca a Vickers July 19, 2016	Technical Reviewer (signature and date)	Hang N. Elis III 19 July 2016
Laboratory Report No.	16070647	Laboratory	Bureau Veritas/Novi, MI
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15	
Samples and Matrix	Twelve air samples (including two field dup	licates)	
Field Duplicate Pairs	GRPCE-02-IA-	DP and GRPCE-10-IA-	GRPCE-10-IA-DP
Field Blanks	None		

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection of results was required for this data set. The data is usable as qualified based on the findings of this validation.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrument Performance Checks:

Within Criteria	Exceedance/Notes
Υ	

Initial Calibration:

Within Criteria	Exceedance/Notes
Y	

Continuing Calibration:

Within Criteria	Exceedance/Notes
Υ	

Calibration Verification:

Within Criteria	Exceedance/Notes
NA	

Method blanks:

Within Criteria	Exceedance/Notes	
N	The individual canister certification for sample GRPCE-01-BAG01 contained tetrachloroethene at 0.14 micrograms per cubic meter (µg/m3) / 0.020 parts per billion volume (ppbV). No qualification was required because the associated results were greater than ten times the canister certification value.	
	The individual canister certification for sample GRPCE-10-IA- contained trichloroethene at $0.054 \mu g/m3 / 0.010$ ppbV. The associated results were qualified as estimated with a possible high bias (J+).	



	EIN REGIONS START CONTRACT
Field blank	cs:
Within Criteria	Exceedance/Notes
NA	
Interferen	ce Check Samples (ICS) (ICP metals only):
Within Criteria	Exceedance/Notes
NA	
	onitoring compounds (surrogates and labeled compounds):
Within Criteria	Exceedance/Notes
Υ	
MS/MSD:	
Within Criteria	Exceedance/Notes
NA	
	tion spikes:
Within	Exceedance/Notes
Criteria	
NA	
Serial dilut	tions:
Within Criteria	Exceedance/Notes



NA

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	

Field duplicates:

Within Criteria	Exceedance/Notes
Υ	

LCSs/LCSDs:

Within Criteria	FXCEEDANCE/NOTES
Υ	

Sample dilutions:

Within Criteria	Exceedance/Notes							
Υ	Samples GRPCE-10-IA-dichloroethene.	and GRPCE-10-IA-	were analyzed at 5-fold dilutions for trans-1,2-					

Re-extraction and reanalysis:

Within Criteria	Exceedance/Notes
NA	

Second column confirmation (GC and HPLC analyses only):

	, , , , , , , , , , , , , , , , , , , ,				
Within	Exceedance/Notes				
Criteria	Exceedance/ Notes				
NA					



Internal Standards:		
Within		
Criteria	Exceedance/Notes	
Υ		
Target analyte identification:		
Within	Exceedance/Notes	
Criteria	Exceedance/ Notes	
Y		
Analyte quantitation and MDLs/RLs:		
Within		
Criteria	Exceedance/Notes	
Y		
Tantativaly identified compounds		
Tentatively identified compounds: Within		
Criteria	Exceedance/Notes	
NA		
IVA		
System performance and instrument s	tability:	
Within		
Criteria	Exceedance/Notes	
Y		
Other [specify]:		
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.





Sample Identification GRPCE-01-BAG01

Date: 14-Jul-16

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16070647

Lab Number:

002A

Date Sampled: 7/11/2016

Sample Type:

Air, Can

Date Received: 7/12/2016 Analysis Date: 7/13/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-2.37 psig

Final Pressure:

-2.37 psig

Canister ID:

14586

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	0.12 3	0 024	0.16	0.0303	0 0061	0.04	1	+e
127-18-4	Tetrachloroethene	82	0.036	0.27	12	0 0053	0.04	1	
156-60-5	trans-1,2-Dichlorocthene	22	0.019	0.16	5.6	0.0049	0.04	1	
79-01-6	Trichlorocthene	0.43	0.021	0.21	0.080	0.0039	0.04	1	
75-01-4	Vinyl Chloride	0.15	0 022	0.10	0.060	0.0088	0.04	1	



General Notes and Qualifiers:

-, Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r T, Tentatively Identified Compound (TIC)

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S, Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits



Date: 14-Jul-16

Client:	TETRA TECH	
Project:	GRAND RAPIDS EMERGENCY RESPONSE	Work Order No: 16070647
Sample Identif	ication GRPCE-01-TABLE01	Date Sampled: 7/11/2016
Lab Number:	001A	Date Received: 7/12/2016
Sample Type: Air, Can		Analysis Date: 7/13/2016
Test Method:	EPA Method TO-15A	Analyst: DRS
Initial Pressure: -1.4 psig		
Final Pressure	: -1.4 psig	
Canister ID:	14031	
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m²) (ug/m²) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	0 079 3 0 024 0.16 0.020 3 0.0061 0.04 1
127-18-4	Tetrachloroethene	51 0.036 0.27 7.5 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	52 0.019 0.16 13 0.0049 0.04 1
79-01-6	Trichloroethene	0.70 0.021 0.21 0.13 0.0039 0.04 1
75-01-4	Vinyl Chloride	NB 0.022 0.100 NB 0.0088 (0.040) 1



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r T; Tentatively Identified Compound (TIC)

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

E; Value exceeds linear range of calibration curve



Vinyl Chloride

Date: 14-Jul-16

0.04U

Client:	TETRA TECH	
Project:	GRAND RAPIDS EMERGENCY RESPONSE	Work Order No: 16070647
Sample Iden	tification GRPCE-02-1A-	Date Sampled: 7/12/2016
Lab Number	r: 003A	Date Received: 7/12/2016
Sample Type	e: Air, Can	Analysis Date: 7/13/2016
Test Method	1: EPA Method TO-15A	Analyst: DRS
Initial Press	ure: -1.86 psig	
Final Pressu	re: -1.86 psig	
Canister ID	: 14039	
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m²) (ug/m²) (ug/m²) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.0241 0.16U ND 0 0061 (0.04U)
127-18-4	Tetrachloroethene	1.2 0 036 0.27 0.17 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	0.040 3 0 019 0.16 0.010 3 0.0049 0.04 1
79-01-6	Trichloroethene	011 5 0.021 0.21 0.020 5 0.0039 0.04 1



General Notes and Qualifiers:

75-01-4

-; Information not available or not applicable.

ND: Less than the indicated limit of detection (LOD)

RL; Report Limit

J: Value is between the MDL and Reporting Limit, estimated r T; Tentatively Identified Compound (TIC)

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits



Date: 14-Jul-16

Client:	TETRA TECH					
Project:	GRAND RAPIDS EMERGENCY RESPONSE				Work Order No	: 16070647
Sample Identificat	tion GRPCE-02-1A-DP				Date Sampled	1: 7/12/2016
Lab Number:	004A				Date Received	1: 7/12/2016
Sample Type:	Air, Can				Analysis Date	e: 7/13/2016
Test Method:	EPA Method TO-15A				Analys	t: DRS
Initial Pressure:	-1.97 psig					
Final Pressure:	-1.97 psig					
Canister ID:	14576					
		Results	MDL	RL	Results MD	L RL

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 (0.160) ND 0.0061 (0.040)
127-18-4	Tetrachloroethene	1.3 0.036 0.27 0.19 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	0.040 3 0.019 0.16 0.010 3 0.0049 0.04 1
79-01-6	Trichloroethene	0.054 3 0.021 0.21 0.010 3 0.0039 0.04 1 +
75-01-4	Vinyl Chloride	ND- 0.022 0.10 U ND 0 0088 (0.04 U)1



--; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J: Value is between the MDL and Reporting Limit, estimated r T; Tentatively Identified Compound (TIC)

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits



trans-1,2-Dichloroethene

Trichloroethene

Vinyl Chloride

Date: 14-Jul-16

Client:	TETRA TECH								
Project:	GRAND RAPIDS EMERGENCY RESPONSE			V	Vork Ord	ler No:	1607064	7	
Sample Identifica	tion GRPCE-10-IA				Date Sa	mpled:	7/12/201	6	
Lab Number:	011A				Date Re	ceived:	7/12/201	6	
Sample Type:	Air, Can				Analysi	s Date:	7/13/201	6	
Test Method:	EPA Method TO-15A				Λ	nalyst:	DRS		
Initial Pressure:	-0.96 psig								
Final Pressure:	-0.96 psig								
Canister ID:	13929								
CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL. (ppbV)	DF	Qual
	-1,2-Dichloroethene rachloroethene	0.079	0.024		0.020 3	0.0061	0.04	1	5

160

0.32

0.099

0.021

0.022

0.79

41

0.060

0.025

0.0039

8800.0 GI

0.2

0.04

0.040

5



156-60-5

79-01-6

75-01-4

-: Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



14572

Canister ID:

Date: 14-Jul-16

Client:	TETRA TECH		
Project:	GRAND RAPIDS EMERGENCY RESPONSE	Work Order No:	16070647
Sample Identificati	on GRPCE-10-IA	Date Sampled:	7/12/2016
Lab Number:	009A	Date Received:	7/12/2016
Sample Type:	Air, Can	Analysis Date:	7/13/2016
Test Method:	EPA Method TO-15A	Analyst:	DRS
Initial Pressure:	-1.66 psig		
Final Pressure:	-1.66 psig		

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m²) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qu:
156-59-2	cis-1,2-Dichloroethene	ND 0.024 (0.16 U) ND 0.0061 (0.04 U)1
127-18-4	Tetrachloroethene	0.88 0.036 0.27 0.13 0.0053 0.04 1
156-60-5	trans-1,2-Dichlorocthene	4.4 0.019 0.16 1.1 0.0049 0.04 1
79-01-6	Trichlorocthene	0.16 3 0 021 0.21 0.030 3 0.0039 0.04 1 +
75-01-4	Vinyl Chloride	ND 0.022 (0.10 U) ND 0.0088 (0.04U)1



ND: Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

^{-;} Information not available or not applicable.



Date: 14-Jul-16

Date Received: 7/12/2016

Analysis Date: 7/13/2016

Analyst: DRS

Client: TETRA TECH

GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16070647 Project:

Sample Identification GRPCE-10-IA- (MAIN)-DP Date Sampled: 7/12/2016

Lab Number:

010A

Sample Type: Air, Can

Test Method: EPA Method TO-15A

Initial Pressure: -1.72 psig Final Pressure: -1.72 psig

Canister ID	14628	
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m²) (ug/m²) (ug/m²) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 0.16 U NB 0.0061 0.04 U 1
127-18-4	Tetrachloroethene	0.95 0.036 0.27 0.14 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	4.4 0.019 0.16 1.1 0.0049 0.04 1
79-01-6	Trichloroethene	0.16 3 0.021 0.21 0.030 3 0.0039 0.04 1
75-01-4	Vinyl Chloride	ND 0.022 (0.10 U) ND 0.0088 (0.04 U)



ND; Less than the indicated limit of detection (LOD)

RL: Report Limit

J: Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

^{-;} Information not available or not applicable

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 14-Jul-16

RL

(ppbV)

DF Qual

Date Sampled: 7/12/2016

Date Received: 7/12/2016

Analysis Date: 7/13/2016

Analyst: DRS

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16070647

Sample Identification GRPCE-10-IA-

Lab Number: 008A

Sample Type: Air, Can

Test Method: EPA Method TO-15A

Initial Pressure: -2.24 psig
Final Pressure: -2.24 psig

Canister ID: 14474

Results MDL RL Results MDL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV)

0 079 J 0.024 156-59-2 cis-1,2-Dichloroethenc 0.16 0 0203 0.0061 0.04 0.036 0.0053 0.04 127-18-4 Tetrachloroethcne 9.2 0.27 1.4 0.025 156-60-5 trans-1,2-Dichloroethene 230 0.099 0.79 59 0.2 5 0.040 34 .0039 0 21 3 0.021 0.04 79-01-6 Trichloroethene 0.21 0.022 0.10 U NB 0 0088 0.04 U Vinyl Chloride 75-01-4



General Notes and Qualifiers:

-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL: Report Limit

J: Value is between the MDL and Reporting Limit, estimated r

MDL: Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Date: 14-Jul-16

Date Received: 7/12/2016

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16070647

Sample Identification GRPCE-10-IA-1 (MAIN) Date Sampled: 7/12/2016

Lab Number: 007A

Sample Type: Air, Can Analysis Date: 7/13/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -1.87 psig
Final Pressure: -1.87 psig
Canister ID: 14131

CAS#	Analyte	5,770,77	MDL ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (pphV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	0.040 丁	0 024	0.16	0.010 J	0061	0.04	1	ge
127-18-4	Tetrachloroethene	4.4	0.036	0.27	0.65	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	52	0.019	0.16	13	0.0049	0.04	-1	
79-01-6	Trichloroethene	0.11 丁	0.021	0.21	0.020J	h 0039	0.04	1	+
75-01-4	Vinyl Chloride	ND.	0.022	0.10	U ND	0.0088	0.04	1	



^{-,} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL. Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 14-Jul-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16070647

Sample Identification GRPCE-11-IA (1

GRPCE-11-IA (1) Date Sampled: 7/12/2016

Sample Type: Air, Can

Lab Number:

005A Date Received: 7/12/2016
Air, Can Analysis Date: 7/13/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -2.94 psig
Final Pressure: -2.94 psig

Canister ID: 14471

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethenc	110 0 024 (0 16 U) NO 0 0061 (0 04 U) 1
127-18-4	Tetrachloroethene	16 0.036 0.27 0.23 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethenc	50 0.019 0.16 1.3 0.0049 0.04 1
79-01-6	Trichloroethene	0.054 3 0 021 0.21 0.010 3 0 0039 0.04 1
75-01-4	Vinyl Chloride	ND 0.022 (0.100) ND 0.0088 (0.040)



^{-;} Information not available or not applicable.

ND: Less than the indicated limit of detection (LOD)

RL: Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R: RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 14-Jul-16

Client:	TETRA TECH			
Project:	GRAND RAPIDS EMERGENCY RESPONSE	Work Order No:	16070647	
Sample Identif	fication GRPCE-11-IA-	Date Sampled:	7/12/2016	
Lab Number:	006A	Date Received:	7/12/2016	
Sample Type:	Air, Can	Analysis Date:	7/13/2016	
Test Method:	EPA Method TO-15A	Analyst:	DRS	
Initial Pressur	e: -1.79 psig			
Final Pressure	: -1.79 psig			
Canister ID:	14297			
CAS#	Analyte	Results MDL RL Results MDL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV)		
156-59-2	cis-1,2-Dichloroethene	ND 0.024 (016U) ND 0 0061	0.04 1	
127-18-4	Tetrachloroethene	1.2 0.036 0.27 0.18 0.0053	0.04 1	
156-60-5	trans-1.2-Dichloroethene	1.9 0.019 0.16 0.49 0.0049	0.04	
79-01-6	Trichloroethene	0.054 3 0.021 0.21 0.010 3 0 0039	0.04 1	
75-01-4	Vinyl Chloride	ND 0.022 0.10 ND 0.0088	0.041	



ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r T; Tentatively Identified Compound (TIC)

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

^{-;} Information not available or not applicable.



Date: 14-Jul-16

Client:	TETRA TECH			
Project: GRAND RAPIDS EMERGENCY RESPONSE		Work Order No:	16070647	
Sample Ide	ntification GRPCE-14-OA-	Date Sampled:	7/12/2016	
Lab Numbe	er: 012A	Date Received:	7/12/2016	
Sample Typ	oe: Air, Can	Analysis Date:	7/13/2016	
Test Metho	d: EPA Method TO-15A	Analyst:	DRS	
Initial Pres	sure: -2.27 psig			
Final Press	ure: -2.27 psig			
Canister II	D: 14036			
CAS#	Analyte	Results MDL RL Results MDL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV)	RI. (ppbV) DF Qual	
156-59-2	cis-1,2-Dichlorocthene	ND 0.024 (0.16 U) ND 0.0061	(0.040)1	
127-18-4	Tetrachloroethene	0.34 0.036 0.27 0.050 0.0053	0.04 1	
156-60-5	trans-1,2-Dichloroethene	0.040 3 0.019 0.16 0.010 3 0.0049	0.04 1	
79-01-6	Trichloroethene	0.054 3 0.021 0.21 0.010 3 0.0039	0.04 1	
75-01-4	Vinyl Chloride	ND 0.022 (0.100) ND 0.0088	0.0401	



-, Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J: Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B. Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

Site Name	Grand Rapids VI ER		TDD No.	\$05-0001-1605-010
Document Tracking No.	0954B			303-0001-1603-010
Data Reviewer (signature and date)	Jeoaca a Vickers July 19, 2016		Technical Reviewer (signature and date)	Hang N. Elis III 19 July 2016
Laboratory Report No.	16070786	Ī	Laboratory	Bureau Veritas/Novi, MI
Analyses	Volatile organic compounds (VOCs) by EPA	M	ethod TO-15	
Samples and Matrix	Eight air samples (including a field duplicat	te)		
Field Duplicate Pairs	GRPCE-11-IA-		DP	
Field Blanks	None			

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Y	
Initial Calibration:	
Within	Exceedance/Notes
Criteria	Executive y Notes
Υ	
Continuing Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Υ	
Calibration Verification:	
Within	Exceedance/Notes
Criteria	Exact durine, Notes
NA	
Method blanks:	
Within	Exceedance/Notes
Criteria	Endecadinely Notes
Υ	

Exceedance/Notes



Within

Criteria NA

Interference	Check Sam	ples (ICS)	(ICP	metals only	/):
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Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within	Exceedance/Notes
Criteria	
NA	



Field duplicates:

Within Criteria	Exceedance/Notes
Υ	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Υ	

Sample dilutions:

Within Criteria		Exceedance/Notes
V	Sample GRPCE-11-IA-	was analyzed at a 20-fold dilution for trans-1,2-dichloroethene.
Ť	Sample GRPCE-11-IA-	was analyzed at a 10-fold dilution for trans-1,2-dichloroethene.

Re-extraction and reanalysis:

Within Criteria	Exceedance/Notes
NA	

Second column confirmation (GC and HPLC analyses only):

	, , ,
Within	Even dance /Notes
Criteria	Exceedance/Notes
NA	

Internal Standards:

Within Criteria	Exceedance/Notes
Υ	



Target analyte identification	Target	analy	vte i	iden	tifica	ition
-------------------------------	--------	-------	-------	------	--------	-------

Within Criteria	Exceedance/Notes
Υ	
nalyte qua	ntitation and MDLs/RLs:
Within	
Criteria	Exceedance/Notes

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

Other Labe	enyl.
Within	Evenedance/Notes
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.





Date: 15-Jul-16

Date Received: 7/14/2016

Analysis Date: 7/15/2016

Analyst: DRS

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16070786

Sample Identification GRPCE-11-IA

Date Sampled: 7/14/2016

Lab Number: 007A

Sample Type: Air, Can

Test Method: EPA Method TO-15A

Initial Pressure: -2.8 psig

Final Pressu Canister ID:									
CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	0 20	0.024	0.16	0 050	0 0061	0.04	1	
127-18-4	Tetrachloroethene	5.8	0.036	0.27	0 85	0 0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	520	0.39	3.2	130	0.098	0.8	20	
79-01-6	Trichloroethene	0.43	0.021	0.21	0.080	0.0039	0.04	_ 1	
75-01-4	Vinyl Chloride	ND	0.022	0.10	U NI	> 0 0088	(0.04 U) 1	



^{-;} Information not available or not applicable.

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 15-Jul-16

Client: **TETRA TECH**

Final Pressure:

Work Order No: 16070786 Project: GRAND RAPIDS EMERGENCY RESPONSE

Sample Identification GRPCE-11-IA Date Sampled: 7/14/2016

Lab Number: 006A Date Received: 7/14/2016 Sample Type: Analysis Date: 7/15/2016 Air, Can

Analyst: DRS Test Method: EPA Method TO-15A

Initial Pressure: -1.92 psig

-1.92 psig Canister 1D: 13998

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	ND-	0.024	0.161) NE	0 0061	0.04	DI	
127-18-4	Tetrachloroethene	0.95	0.036	0.27	0.14	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	14	0.019	0.16	3.6	0.0049	0.04	1	
79-01-6	Trichloroethene	0.21	0.021	0.21	0.040	0.0039	0.04	1	
75-01-4	Vinyl Chloride	ND	0.022	(0.10)	IN (≥ 0.0088	(0.04 L	1)1	



^{--;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 15-Jul-16

Date Sampled: 7/14/2016

Date Received: 7/14/2016

Analysis Date: 7/15/2016

Analyst: DRS

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16070786

Sample Identification GRPCE-11-IA-

Lab Number: 005A

Sample Type: Air, Can

Test Method: EPA Method TO-15A

Initial Pressure: -2.09 psig
Final Pressure: -2.09 psig
Canister ID: 14032

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Quall
156-59-2	cis-1,2-Dichloroethene	0.079	0.024	0.16	0.020 J	0.0061	0.04	1	10
127-18-4	Tetrachloroethene	13	0.036	0.27	1.9	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethenc	250	0.19	1.6	63	0.049	0.4	10	
79-01-6	Trichloroethene	0.21	0.02	0.21	0.040	0.0039	0.04	1	
75-01-4	Vinyl Chloride	ND	0.02	0.10	U) NOD	0 0088	0.040	1	



^{--,} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curvo



Date: 15-Jul-16

Date Sampled: 7/14/2016

Date Received: 7/14/2016

Analysis Date: 7/15/2016

Analyst: DRS

Client: **TETRA TECH**

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16070786

Sample Identification GRPCE-11-IA

Lab Number: 003A

Sample Type: Air, Can

Test Method:

EPA Method TO-15A

Initial Pressure:

-2.6 psig

Final Pressure:

-2.6 psig

Canister ID:

14014

		Results	MDL	RL	Results	MDL	RL		
CAS#	Analyte	(ug/m³)	(ug/m³)	(ug/m³)	(ppbV)	(bbp)	(ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	0.040	0.024	0.16	0.0103	0.0061	0.04	1	- Je
127-18-4	Tetrachloroethene	5.3	0.036	0.27	0.78	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	44	0.019	0.16	- 11	0.0049	0.04	1	
79-01-6	Trichloroethene	0.054	0.021	0.21	0.0103	0.0039	0.04	1	Ja
75-01-4	Vinyl Chloride	ND	0.022	0.10	U) NE	0.0088	0.040)1	



^{--,} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 15-Jul-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16070786

Sample Identification GRPCE-11-IA

Date Sampled: 7/14/2016

Lab Number: 004A

Date Received: 7/14/2016

Sample Type: Air, Can

Test Method:

EPA Method TO-15A

Analysis Date: 7/15/2016 Analyst: DRS

Initial Pressure:

-2.8 psig

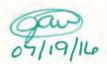
Final Pressure:

-2.8 psig

Canister ID:

14338

CAS#	Analyte	752757	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethenc	0 040 3	0 024	0.16	0.010 3	0.0061	0.04	1	je.
127-18-4	Tetrachloroethene	4.9	0 036	0.27	0.72	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethenc	40	0 019	0.16	10	0.0049	0.04	1	
79-01-6	Trichloroethene	0 11 5	0 021	0.21	0.0203	0.0039	0.04	1	1
75-01-4	Vinyl Chloride	ND-	0.022	0.101) NO	0 0088	0.040	1	



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r T; Tentatively Identified Compound (TIC)

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

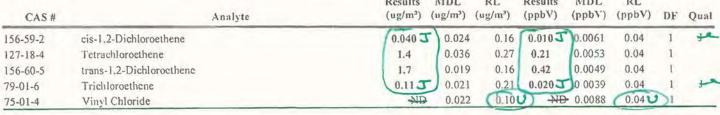
R; RPD outside accepted recovery limits

E; Value exceeds linear range of calibration curve



Date: 15-Jul-16

Client:	TETRA TECH					
Project:	GRAND RAPIDS EMERGENCY RESPONSE				Work Order No	16070786
Sample Identificat	tion GRPCE-12-IA (1)				Date Sampled	7/14/2016
Lab Number:	001A				Date Received	7/14/2016
Sample Type:	Air, Can				Analysis Date	7/14/2016
Test Method:	EPA Method TO-15A				Analyst	: DRS
Initial Pressure:	-3.28 psig					
Final Pressure:	-3.28 psig					
Canister ID:	13927					
	-	Results	MDL	RL	Results MDI	RL





^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r T; Tentatively Identified Compound (TIC)

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

E; Value exceeds linear range of calibration curve



Date: 15-Jul-16

Analysis Date: 7/15/2016

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16070786

Sample Identification GRPCE-12-IA- (2) Date Sampled: 7/14/2016

Lab Number: 002A

Air, Can

002A Date Received: 7/14/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -2.38 psig
Final Pressure: -2.38 psig

Canister ID: 14590

Sample Type:

CAS#	Analyte		MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	ND.	0.024	0.16	ND	0 0061	0.04	1	
127-18-4	Tetrachloroethene	3.6	0.036	0.27	0.53	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	5.2	0.019	0.16	1.3	0.0049	0.04	1	
79-01-6	Trichloroethene	0.054 3	0 021	0.21	0.010 3	0 0039	0.04	1	10
75-01-4	Vinyl Chloride	ND-	0.022	0.10	GHA (L	0 0088	0040) 1	



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Air, Can

Date: 15-Jul-16

Analysis Date: 7/15/2016

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16070786

Sample Identification GRPCE-15-OA Date Sampled: 7/14/2016

Lab Number: 008A Date Received: 7/14/2016

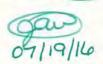
Sample Type:

EPA Method TO-15A Analyst: DRS Test Method:

Initial Pressure: -2.21 psig Final Pressure: -2.21 psig

Canister ID: 14617 Results MDL RL Results MDL RL (ug/m3) (ug/m3) (ug/m³) (ppbV) (pphV) (ppbV) DF Qual C.15 # Analyte

0.010 3 0.0061 0.040 J 0 024 0.16 0.04 cis-1,2-Dichloroethene 156-59-2 0.090 0.0053 0.61 0.036 0.27 0.04 Tetrachloroethene 127-18-4 0.040 0.0049 0.019 0.16 0.04 0.16 156-60-5 trans-1,2-Dichloroethene 0.020 3 0.0039 0 021 0.21 0.04 79-01-6 Trichloroethene 0.11 J 0.040 8800 0 444 ND 0.022 75-01-4 Vinyl Chloride



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R: RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



July 26, 2016

Betsy Nightingale On-Scene Coordinator U.S. Environmental Protection Agency Region 5 9311 Groh Road Grosse Ile, MI 48138-1697

Subject: Data Validation Report

Grand Rapids VI ER

EPA Contract No. EP-S5-13-01

Technical Direction Document No. S05-0001-1605-010

Document Tracking No. 0967

Dear Ms. Nightingale:

Tetra Tech Inc. (Tetra Tech) is submitting this Data Validation Report for one air sample collected at the Grand Rapids VI ER site. The sample was collected July 15, 2016 and was analyzed for volatile organic compounds by Bureau Veritas Laboratories. Tetra Tech received the final data on July 25, 2016.

Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines* (NFG) for Superfund Organic Methods Data Review (August 2014).

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

If you have any questions regarding this Data Validation Report, please call me at (662) 681-5727.

Sincerely,

Jessica A. Vickers START Chemist

Enclosure

cc: Kevin Scott, Tetra Tech Program Manager

Michael Browning, Tetra Tech Project Manager

TDD File

Jesaca a Vickers

ATTACHMENT 1 DATA VALIDATION REPORTS SDGS 16070940

Site Name	te Name Grand Rapids VI ER		SOF 0001 160F 010	
Document Tracking No.	0967	TDD No.	S05-0001-1605-010	
Data Reviewer (signature and date) July 26, 201		Technical Reviewer (signature and date)	Hang N. Elis III 26 July 2016	
Laboratory Report No.	Laboratory Report No. 16070940		Bureau Veritas/Novi, MI	
Analyses	Volatile organic compounds (VOCs) by EPA Method TO-15			
Samples and Matrix	One air sample			
Field Duplicate Pairs	None			
Field Blanks	None			

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Y	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Y	
Initial Calibration:	
Within	Exceedance/Notes
Criteria	Executive y Notes
Υ	
Continuing Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Υ	
Calibration Verification:	
Within	Exceedance/Notes
Criteria	Exact durine, Notes
NA	
Method blanks:	
Within	Exceedance/Notes
Criteria	Endecadinely Notes
Υ	

Exceedance/Notes



Within

Criteria NA

Interference	Check Sam	ples (ICS)	(ICP	metals only	/):
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Within Criteria	Exceedance/Notes	
NA		
Contain we site vise a constant of the second labeled constant		

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within	Exceedance/Notes
Criteria	Exceedance/ Notes
NA	



	EFA REGION 5 START CONTRACT	
Field duplicates:		
Within	Exceedance/Notes	
Criteria	Executance/ Notes	
NA		
LCSs/LCSDs:		
Within		
Criteria	Exceedance/Notes	
Υ		
Sample dilutions:		
Within	Formandones (Notes	
Criteria	Exceedance/Notes	
NA		
Re-extraction and reanalysis:		
Within	Exceedance/Notes	
Criteria	Exceedance/Notes	
NA		
Second column confirmation (GC and I	IPLC analyses only):	
Within	Fysoodones/Notes	
Criteria	Exceedance/Notes	
NA		
Internal Standards:		
Within	Exceedance/Notes	
Criteria	·	



Target analyte identification	Target	analy	vte i	iden	tifica	ition
-------------------------------	--------	-------	-------	------	--------	-------

Within Criteria	Exceedance/Notes
Υ	
nalyte qua	ntitation and MDLs/RLs:
Within	
Criteria	Exceedance/Notes

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

Other [spe	enyl.
Within	Evenedance/Notes
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.





Date: 18-Jul-16

Date Sampled: 7/15/2016

Date Received: 7/16/2016

Analysis Date: 7/16/2016

Analyst: JTF

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16070940

Sample Identification GRPCE-03-IA-

Lab Number: 001A

Sample Type:

Air, Can

Test Method:

EPA Method TO-15A

Initial Pressure:

-2.41 psig

Final Pressure:

-2 41 nsig

rinai Pressu	re: -2.41 psig	
Canister ID:	14400	
		Results MDL RL Results MDL RL
CAS#	Analyte	(ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 (0.16U) ND 0 0061 (0.04U) 1
127-18-4	Tetrachloroethene	0.81 0.036 0.27 0.12 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	ND 0.019 0.16U ND 0.0049 0.04U 1
79-01-6	Trichloroethene	0.113 0.021 0.21 0.020 0.0039 0.04 1
75-01-4	Vinyl Chloride	ND 0.022 0.100 ND 0 0088 0.040 1



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL, Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



July 28, 2016

Betsy Nightingale On-Scene Coordinator U.S. Environmental Protection Agency Region 5 9311 Groh Road Grosse Ile, MI 48138-1697

Subject: Data Validation Reports

Grand Rapids VI ER

EPA Contract No. EP-S5-13-01

Technical Direction Document No. S05-0001-1605-010

Document Tracking No. 0972

Dear Ms. Nightingale:

Tetra Tech Inc. (Tetra Tech) is submitting these Data Validation Reports for seventeen air samples (including three field duplicates) collected at the Grand Rapids VI ER site. The samples were collected on July 19 and 20, 2016 and were analyzed for volatile organic compounds by Bureau Veritas Laboratories. Tetra Tech received the final data on July 27, 2016.

Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines* (NFG) for Superfund Organic Methods Data Review (August 2014).

No rejection of results was required for this data set. The data is usable as qualified based on the findings of this validation.

If you have any questions regarding these Data Validation Reports, please call me at (662) 681-5727.

Sincerely,

Jessica A. Vickers START Chemist

DITTICI CHEIIIIS

Enclosure

cc: Kevin Scott, Tetra Tech Program Manager

Michael Browning, Tetra Tech Project Manager

TDD File

Jesaca a Vickers

ATTACHMENT 1

DATA VALIDATION REPORTS SDGS 16071052 AND 16071159

Site Name	Grand Rapids VI ER		TDD No.	S05-0001-1605-010	
Document Tracking No.	0972A				
Data Reviewer (signature and date)	Jesaca a. Vickers July 28, 2016		Technical Reviewer (signature and date)	Hang N. Elis III 28 July 2016	
Laboratory Report No.	16071052		Laboratory	Bureau Veritas/Novi, MI	
Analyses	Volatile organic compounds (VOCs) by EPA Method TO-15				
Samples and Matrix	Nine air samples (including two field duplicates)				
Field Duplicate Pairs	GRPCE-12-IA- (BASEMENT)/GRPCE-12-IA- (BASEMENT)-DP and GRPCE-13-IA- 2)/GRPCE-13-IA- 2)-DP				
Field Blanks	None				

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Y	
Initial Calibration:	
Within	Exceedance/Notes
Criteria	Executive y Notes
Υ	
Continuing Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Υ	
Calibration Verification:	
Within	Exceedance/Notes
Criteria	Exact durine, Notes
NA	
Method blanks:	
Within	Exceedance/Notes
Criteria	Endecadinely Notes
Υ	

Exceedance/Notes



Within

Criteria NA

Interference	Check Sam	ples (ICS)	(ICP	metals only	/):
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Within Criteria	Exceedance/Notes	
NA		

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within	Evenedones /Notes
Criteria	Exceedance/Notes
NA	



Fie	ld	d	uı	pli	ica	at	es	

Within Criteria	Exceedance/Notes
Υ	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Υ	

Sample dilutions:

Within Criteria	Exceedance/Notes			
Υ	Samples GRPCE-12-IA- (BASEMENT), GRPCE-12-IA-analyzed at 10-fold dilutions for trans-1,2-dichloroethene.	(BASEMENT)-DP, and GRPCE-12-IA-		

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
Υ	



Target analyte identi	tication	ľ
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Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes	
Υ	The laboratory qualified results between the reporting limit and method detection limit as estimated (J).	

Tentatively identified compounds:

Within Criteria	Exceedance/Notes	
NA		

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

Other labe	other [specify].				
Within	Even adams / Nintes				
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.





Date: 21-Jul-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16071052

Sample Identification GRPCE-12-IA-

(BASEMENT)

Date Sampled: 7/19/2016

Lab Number: 007A

,

Date Received: 7/19/2016

Sample Type:

Air, Can

Analysis Date: 7/20/2016

Test Method:

EPA Method TO-15A

Analyst: JTF

Initial Pressure:

-2.02 psig

Final Pressure:

-2.02 psig

Canister ID:

13987

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) D	F Qual
156-59-2	cis-1,2-Dichloroethene	(0.079 J 0.024 0.16 (0.020 J 0.0061 0.04 1	ye
127-18-4	Tetrachloroethene	5.0 0.036 0.27 0.74 0.0053 0.04	
156-60-5	trans-1,2-Dichloroethene	220 0.19 1.6 55 0.049 0.4 1)
79-01-6	Trichloroethene	0.48 0.021 0.21 0.090 0.0039 0.04	
75-01-4	Vinyl Chloride	ND 0.022 (0.100) ND 0.0088 (0.040)	



B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 21-Jul-16

Client:	TETRA TECH
Project:	GRAND RAPIDS EM

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16071052

Sample Identification GRPCE-12-IA-

(BASEMENT)-DP

Date Sampled: 7/19/2016

Lab Number:

008A

Date Received: 7/19/2016

Sample Type:

Air, Can

Analysis Date: 7/20/2016

Test Method:

EPA Method TO-15A

Analyst: JTF

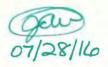
Initial Pressure:

-3.21 psig

Final Pressure: Canister ID:

14290

CAS#	Analyte		IDL ig/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	(0.0793	0.024	0.16	0.020 J	0.0061	0.04	1	-
127-18-4	Tetrachloroethene	5.4	0.036	0.27	0.80	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	250	0.19	1.6	64	0.049	0.4	10	
79-01-6	Trichlorocthene	0.43	0.021	0.21	0.080	0.0039	0.04	1	
75-01-4	Vinyl Chloride	ישא	0.022	0.10) ND	0 0088	0.040	1	



S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 21-Jul-16

Client:	TETRA TECH	
Project:	GRAND RAPIDS EMERGENCY RESPONSE	Work Order No: 16071052
Sample Identif	fication GRPCE-12-IA- (MAIN)	Date Sampled: 7/19/2016
Lab Number:	006A	Date Received: 7/19/2016
Sample Type:	Air, Can	Analysis Date: 7/20/2016
Test Method:	EPA Method TO-15A	Analyst: JTF
Initial Pressur	e: -2.18 psig	
Final Pressure	-2.18 psig	
Canister ID:	13946	
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 (016U) ND 0 0061 (0 04U)1
127-18-4	Tetrachloroethene	1.8 0.036 0.27 0.27 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	23 0.019 0.16 5.8 0.0049 0.04 1
79-01-6	Trichlorocthene	0.27 0.021 0.21 0.050 0.0039 0.04 1
75-01-4	Vinyl Chloride	ND 0.022 0.100 ND 0 0088 0.040 1



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J: Value is between the MDL and Reporting Limit, estimated r T; Tentatively Identified Compound (TIC)

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

E; Value exceeds linear range of calibration curve



Date: 21-Jul-16

Date Sampled: 7/19/2016

Date Received: 7/19/2016

Analysis Date: 7/20/2016

Analyst: JTF

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16071052

Sample Identification GRPCE-12-IA-

Lab Number: 005A

Sample Type: Air, Can

Test Method: EPA Method TO-15A

Initial Pressure: -2.02 psig
Final Pressure: -2.02 psig

Canister ID	: 14570								
CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	0.0793	0.024	0.16	(0.020J	0.0061	0.04	1	4
127-18-4	Tetrachloroethene	9.1	0.036	0.27	1.3	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	200	0.19	1.6	50	0.049	0.4	10	
79-01-6	Trichloroethene	0.27	0.021	0.21	0.050	0.0039	0.04	-1	
75-01-4	Vinyl Chloride	ND.	0.022	0.10	U) NE	0.0088	0.04 L)	



-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Date: 21-Jul-16

Date Sampled: 7/19/2016

Date Received: 7/19/2016

Analysis Date: 7/20/2016

Analyst: JTF

Client:	TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16071052

Sample Identification GRPCE-12-IA-

Lab Number: 004A

Sample Type: Air, Can

Test Method: EPA Method TO-15A

Vinyl Chloride

Initial Pressure: -1.56 psig
Final Pressure: -1.56 psig

75-01-4

Canister ID: 14591 Results MDL RL Results MDL RL (ug/m³) (ug/m3) (ug/m3) (ppbV) (ppbV) (ppbV) DF Qual CAS# Analyte 0.16 ND 0.0061 0.04 U 156-59-2 cis-1,2-Dichloroethene 0.024 127-18-4 0.036 0.0053 0.04 Tetrachloroethene 0.27 3.5 0.52 trans-1,2-Dichloroethene 0.019 0.0049 0.04 156-60-5 0.16 5.5 22 0.054 3 79-01-6 Trichlorocthene 0.021 0.21 0.0103 0.0039 0.04

ND'

0.022

D.10 U



ND 0 0088

0.041

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 21-Jul-16

Date Sampled: 7/19/2016

Date Received: 7/19/2016

Analysis Date: 7/20/2016

Analyst: JTF

Client: TETRA TECH

GRAND RAPIDS EMERGENCY RESPONSE Project: Work Order No: 16071052

Sample Identification GRPCE-13-IA-

Lab Number: 001A

Sample Type: Air, Can

Test Method: EPA Method TO-15A

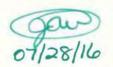
Initial Pressure: Final Pressure:

-1.71 psig -1.71 psig

Canister ID:

14396

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 (0.16U) ND 0.0061 (0.04U)
127-18-4	Tetrachloroethene	1.9 0.036 0.27 0.28 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	11 0.019 0.16 2.7 0.0049 0.04 1
79-01-6	Trichlorocthene	0.113 0.021 0.21 0.020 3 0.0039 0.04 1
75-01-4	Vinyl Chloride	ND 0.022 (0.10 U) ND 0.0088 (0.04 U)1



S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

E; Value exceeds linear range of calibration curve



Date: 21-Jul-16

Client:	TETRA TECH GRAND RAPIDS EMERGENCY RESPONSE	Work Order No:	1/07/052
Project:	who have represented the second		
Sample Ident	ification GRPCE-13-IA-	Date Sampled:	7/19/2016
Lab Number	: 002A	Date Received:	7/19/2016
Sample Type	: Air, Can	Analysis Date:	7/20/2016
Test Method	EPA Method TO-15A	Analyst:	JTF
Initial Pressu	are: -1.70 psig		
Final Pressu	re: -1.70 psig		
Canister 1D:	14002		
CAS#	Analyte	Results MDL RL Results MDL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV)	RL (ppbV) DF Qual
156-59-2	cis-1,2-Dichlorocthene	ND 0.024 0.16 U ND 0.0061	0.04 1
127-18-4	Tetrachlorocthene	3.3 0.036 0.27 0.48 0.0053	0.04
156-60-5	trans-1,2-Dichlorocthene	13 0.019 0.16 3.3 0.0049	0.04
79-01-6	Trichloroethene	0.113 0.021 0.21 0.0203 0.0039	0.04 1
75-01-4	Vinyl Chloride	ND 0.022 (0.100) ND 0.0088	0.040 1



ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J: Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

^{-;} Information not available or not applicable.



14472

Canister ID:

Date: 21-Jul-16

Client:	TETRA TECH		
Project:	GRAND RAPIDS EMERGENCY RESPONSE	Work Order No:	16071052
Sample Identification	tion GRPCE-13-IA- (2)-DP	Date Sampled:	7/19/2016
Lab Number:	003A	Date Received:	7/19/2016
Sample Type:	Air, Can	Analysis Date:	7/20/2016
Test Method:	EPA Method TO-15A	Analyst:	JTF
Initial Pressure:	-2.99 psig		
Final Pressure:	-2.99 psig		

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (pphV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	0.079	0.024	0.16	0.020 3	0.0061	0.04	1	+e
127-18-4	Tetrachloroethene	2.8	0.036	0.27	0.41	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	11	0.019	0.16	2.9	0.0049	0.04	1	
79-01-6	Trichloroethene	0.21	0.021	0.21	0.040	0.0039	0.04	1	
75-01-4	Vinyl Chloride	ALD QUA	0.022	0.10	U) ND	0 0088	0.04 U	1	



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL: Report Limit

J: Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 21-Jul-16

Client:	TETRA TECH	
Project:	GRAND RAPIDS EMERGENCY RESPONSE	Work Order No: 16071052
Sample Ide	ntification GRPCE-16-OA	Date Sampled: 7/19/2016
Lab Numbe	er: 009A	Date Received: 7/19/2016
Sample Typ	pe: Air, Can	Analysis Date: 7/20/2016
Test Metho	d: EPA Method TO-15A	Analyst: JTF
Initial Pres	sure: -1.77 psig	
Final Press	ure: -1.77 psig	
Canister II	D: 14403	
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m²) (ug/m²) (ug/m²) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 016U ND 0 0061 0.04U 1
127-18-4	Tetrachloroethene	0 47 0.036 0.27 0.070 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	0 12 3 0.019 0.16 0.030 3 0.0049 0.04 1
79-01-6	Trichloroethene	0 054 3 0 021 0.21 0.010 3 0.0039 0.04 1
75-01-4	Vinyl Chloride	ND 0.022 0.10 U ND 0.0088 0.04U 1



General Notes and Qualifiers:

-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r T; Tentatively Identified Compound (TIC)

MDL; Method Detection Limit

B; Analyte detected in the associated Method Biank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

Site Name	Grand Rapids VI ER		TDD No.	COE 0001 1COE 010		
Document Tracking No.	0972B	TDD No.		S05-0001-1605-010		
Data Reviewer (signature and date)	Jeoaca a. Vickers July 28, 2016		Technical Reviewer (signature and date)	Hang N. Elis III 28 July 2016		
Laboratory Report No.	16071159		Laboratory	Bureau Veritas/Novi, MI		
Analyses	Volatile organic compounds (VOCs) by EF	PA M	ethod TO-15			
Samples and Matrix	Eight air samples (including a field duplic	ate)				
Field Duplicate Pairs	GRPCE-13-IA-	13-IA	- DI			
Field Blanks	None					

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection of results was required for this data set. The data is usable as qualified based on the findings of this validation.

Data completeness:

Within Criteria	Exceedance/Notes
Y	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrument Performance Checks:

Within Criteria	Exceedance/Notes
Y	

Initial Calibration:

Within Criteria	Exceedance/Notes
Υ	

Continuing Calibration:

Within Criteria	Exceedance/Notes
Υ	

Calibration Verification:

Within Criteria	Exceedance/Notes
NA	

Method blanks:

Within Criteria	Fxceedance/Notes
N	The individual canister certification for sample GRPCE-17-OAmeter (μ g/m3) / 0.010 parts per billion volume (ppbV) and tetrachloroethene at 0.068 μ g/m³ / 0.010 ppbV. The tetrachloroethene result was qualified as estimated with a possible high bias (J+), and the cis-1,2-dichloroethene result was raised to the reporting limit and qualified as non-detect (U).



	EIN REGIONS START CONTRACT
Field blank	cs:
Within Criteria	Exceedance/Notes
NA	
Interferen	ce Check Samples (ICS) (ICP metals only):
Within Criteria	Exceedance/Notes
NA	
	onitoring compounds (surrogates and labeled compounds):
Within Criteria	Exceedance/Notes
Υ	
MS/MSD:	
Within Criteria	Exceedance/Notes
NA	
	tion spikes:
Within	Exceedance/Notes
Criteria	
NA	
Serial dilut	tions:
Within Criteria	Exceedance/Notes



NA

	EPA REGION 5 START CONTRACT
Laboratory	duplicates:
Within	Exceedance/Notes
Criteria	Exceedance/Notes
NA	
Field duplic	cates:
Within	
Criteria	Exceedance/Notes
Υ	
LCSs/LCSDs	::
Within	Formandames (Notes
Criteria	Exceedance/Notes
Υ	
Sample dilu	utions:
Within	
Criteria	Exceedance/Notes
NA	
Re-extracti	on and reanalysis:
Within	·
Criteria	Exceedance/Notes
NA	
Second col	umn confirmation (GC and HPLC analyses only):
Within	
Criteria	Exceedance/Notes



NA

Internal Standards:

Within Criteria	Exceedance/Notes
Υ	

Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	The laboratory qualified results between the reporting limit and method detection limit as estimated (J).

Tentatively identified compounds:

	,
Within	Evenedance/Notes
Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

other (specify).	
Within	Evenedones /Notes
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.





Date: 21-Jul-16

TETRA TECH Client:

GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16071159 Project:

Sample Identification GRPCE-13-IA- (BASEMENT)

Date Sampled: 7/20/2016

Lab Number: 007A

Air, Can Sample Type:

Date Received: 7/20/2016 Analysis Date: 7/21/2016

Test Method:

EPA Method TO-15A Analyst: JTF

Initial Pressure: -1.90 psig Final Pressure: -1.90 psig

Canister ID:

14621

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 (0.16U) ND 0 0061 (0.04U)
127-18-4	Tetrachlorocthene	2.8 0.036 0.27 0.41 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	46 0.019 0.16 12 0.0049 0.04 1
79-01-6	Trichlorocthene	0.113 0.021 0.21 0.020 3 0.0039 0.04 1
75-01-4	Vinyl Chloride	MD 0.022 0.10 U ND 0.088 0.04 U



General Notes and Qualifiers:

-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Date: 21-Jul-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16071159

Sample Identification GRPCE-13-IA- (MAIN)

IN) Date S

Date Sampled: 7/20/2016

Lab Number: 006A

.

Date Received: 7/20/2016

Sample Type:

Air, Can

Analysis Date: 7/20/2016

Test Method:

EPA Method TO-15A

Analyst: JTF

Initial Pressure:

-2.41 psig

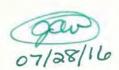
Final Pressure:

-2.41 psig

Canister ID:

14536

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual		
156-59-2	cis-1,2-Dichloroethene	NH 0.024 (0.16 U) + 0 0061 (0.04 U) 1		
127-18-4	Tetrachloroethene	2.2 0.036 0.27 0.32 0.0053 0.04 1		
156-60-5	trans-1,2-Dichloroethene	23 0.019 0.16 5.9 0.0049 0.04 1		
79-01-6	Trichloroethene	0.16 3 0.021 0.21 0.030 0.0039 0.04 1		
75-01-4	Vinyl Chloride	NO 0.022 (0.10 U) NUL 0 0088 (0.04 U)		



General Notes and Qualifiers:

-, Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Date: 21-Jul-16

Date Sampled: 7/20/2016

Date Received: 7/20/2016

Analysis Date: 7/21/2016

Analyst: JTF

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16071159

Sample Identification GRPCE-13-IA-

004A Lab Number:

Sample Type: Air, Can

EPA Method TO-15A Test Method:

Initial Pressure:

-2.19 psig

-2.19 psig Final Pressure: Conleten ID.

Canister ID:	: 14139	
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m²) (ug/m²) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qua
156-59-2	cis-1,2-Dichloroethene	ND 0.024 (0.16 U) ND 0 0061 (0.04 U) 1
127-18-4	Tetrachloroethene	3.1 0.036 0.27 0.46 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	47 0.019 0.16 12 0.0049 0.04 1
79-01-6	Trichloroethene	0.11 3 0.021 0.21 0.020 3 0.0039 0.04 1 +
75-01-4	Vinyl Chloride	ND 0.022 (0.10 U) ND 0 0088 (0.04 U)



General Notes and Qualifiers:

-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Date: 21-Jul-16

Client:	TETRA TECH		
Project:	GRAND RAPIDS EMERGENCY RESPONSE	Work Order No: 16071159	
Sample Ident	ification GRPCE-13-lA-DP	Date Sampled: 7/20/2016	
Lab Number	: 005A	Date Received: 7/20/2016	
Sample Type	: Air, Can	Analysis Date: 7/21/2016	
Test Method:	EPA Method TO-15A	Analyst: JTF	
Initial Pressu	re: -2.63 psig		
Final Pressur	re: -2.63 psig		
Canister ID:	14469		
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m²) (ug/m²) (ug/m²) (ppbV) (ppbV) (ppbV) DF Q	ual
156-59-2	cis-1,2-Dichlorocthene	ND 0.024 (0.16 U) NT 0 0061 (0.04 U) 1	
127-18-4	Tetrachlorocthene	3.3 0.036 0.27 0.49 0.0053 0.04 1	
156-60-5	trans-1,2-Dichloroethene	47 0.019 0.16 12 0.0049 0.04 1	
79-01-6	Trichloroethene	0.11 0.021 0.21 0.020 0.0039 0.04 1	-
75-01-4	Vinyl Chloride	NHO 0.022 (0.10 U) +H++ 0 0088 (0.04 U)1	



General Notes and Qualifiers:

-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Date: 21-Jul-16

Date Sampled: 7/20/2016

Date Received: 7/20/2016

Analysis Date: 7/20/2016

Analyst: JTF

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16071159

Sample Identification GRPCE-13-IA-

Lab Number: 003A

Sample Type: Air, Can

Test Method: EPA Method TO-15A

Vinyl Chloride

Initial Pressure: -1.93 psig Final Pressure: -1.93 psig

75-01-4

14538 Canister ID:

Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) CAS# Analyte DF Qual 0 04 0 0.024 156-59-2 cis-1,2-Dichlorocthene 0.160 0 0061 ND 0.0053 127-18-4 Tetrachlorocthene 0.036 0.27 0.04 156-60-5 trans-1,2-Dichloroethene 16 0.019 0.16 4.1 0.0049 0.04 79-01-6 Trichloroethene 0.054 3 0.021 0.0103 0.0039 0.04 ND 0 0088

0.022

0.10 0



0.04

General Notes and Qualifiers:

-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



ANALYTICAL RESULTS

Client: TETRA TECH Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16071159 Sample Identification GRPCE-14-IA- (1) Date Sampled: 7/20/2016 Lab Number: 001A Date Received: 7/20/2016 Sample Type: Air, Can Analysis Date: 7/20/2016 Test Method: EPA Method TO-15A Analyst: JTF Initial Pressure: -1.6 psig Final Pressure: -1.60 psig 14298 Canister ID: Results MDL RL Results MDL RL CAS# Analyte (ug/m3) (ug/m3) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual 0.16 0.040)1 156-59-2 ND- 0 0061 cis-1,2-Dichloroethene ND 0.024 0.0053 0.04 Tetrachloroethene 0.036 0.27 127-18-4 trans-1,2-Dichloroethene 0.019 0.16 0.44 .0049 0.04 156-60-5 1.7 0.010 3 0.054 3 0 021 0.0039 79-01-6 Trichloroethene 0.21 0.04 75-01-4 Vinyl Chloride 0.022 8800.0 GH4



Date: 21-Jul-16

General Notes and Qualifiers:

--; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL: Report Limit

J: Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



ANALYTICAL RESULTS

Trichloroethene

Vinyl Chloride

Date: 21-Jul-16

Client:	TETRA TECH	
Project:	GRAND RAPIDS EMERGENCY RESPONSE	Work Order No: 16071159
Sample Identific	ration GRPCE-14-IA- (2)	Date Sampled: 7/20/2016
Lab Number:	002A	Date Received: 7/20/2016
Sample Type:	Air, Can	Analysis Date: 7/20/2016
Test Method:	EPA Method TO-15A	Analyst: JTF
Initial Pressure:	-1.99 psig	
Final Pressure:	-1.99 psig	
Canister ID:	13996	
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m²) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
127-18-4 T	is-1,2-Dichloroethene etrachloroethene rans-1,2-Dichloroethene	3.6 0.036 0.27 0.53 0.0053 0.04 1 0.019 0.16 2.3 0.0049 0.04 1



0.10 U) NO 0.0088

0.021

0.022

0.010 3 0.0039

General Notes and Qualifiers:

79-01-6

75-01-4

-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J: Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B: Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



ANALYTICAL RESULTS

Vinyl Chloride

Client: TETRA TECH GRAND RAPIDS EMERGENCY RESPONSE Project: Work Order No: 16071159 Sample Identification GRPCE-17-OA Date Sampled: 7/20/2016 008A Date Received: 7/20/2016 Lab Number: Sample Type: Air, Can Analysis Date: 7/21/2016 EPA Method TO-15A Test Method: Analyst: JTF Initial Pressure: -1.65 psig Final Pressure: -1.65 psig 14000 Canister ID: Results MDL RL Results MDI. RL CAS# Analyte (ug/m3) (ug/m3) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual 0.160 0.020 (0.04 U 156-59-2 cis-1.2-Dichloroethene 0.079 0.024 0.0061 0.070 + 0.0053 0.010 - 0.0049 0.010 - 0.0039 0.04 0.036 Tetrachloroethene 127-18-4 0.475+ 0.0405 trans-1,2-Dichloroethene 0.019 0.16 0.04 156-60-5 0.021 0.04 79-01-6 Trichloroethene 0.054 3 0.21



0.022

0.0088

0.04 U

Date: 21-Jul-16

General Notes and Qualifiers:

75-01-4

-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



August 1, 2016

Betsy Nightingale On-Scene Coordinator U.S. Environmental Protection Agency Region 5 9311 Groh Road Grosse Ile, MI 48138-1697

Subject: Data Validation Reports

Grand Rapids VI ER

EPA Contract No. EP-S5-13-01

Technical Direction Document No. S05-0001-1605-010

Document Tracking No. 0974

Dear Ms. Nightingale:

Tetra Tech Inc. (Tetra Tech) is submitting these Data Validation Reports for sixteen air samples (including two field duplicates) collected at the Grand Rapids VI ER site. The samples were collected on July 5, 15, and 19, 2016 and were analyzed for volatile organic compounds by Eurofins-Air Toxics. Tetra Tech received the last of the data on July 26, 2016.

Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines* (NFG) for Superfund Organic Methods Data Review (August 2014).

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

If you have any questions regarding these Data Validation Reports, please call me at (662) 681-5727.

Sincerely,

Jessica A. Vickers START Chemist

Enclosure

cc: Kevin Scott, Tetra Tech Program Manager

Michael Browning, Tetra Tech Project Manager

TDD File

Jesaca a Vickers

ATTACHMENT 1

DATA VALIDATION REPORTS EUROFINS-AIR TOXICS SDGS 1607107, 1607264, AND 1607335

Site Name	Grand Rapids VI ER	TDD No.	SOF 0001 160F 010
Document Tracking No.	0974A	TOD NO.	S05-0001-1605-010
Data Reviewer (signature and date)	Jesaca a. Vickers July 28, 2016	Technical Reviewer (signature and date)	Hang N. Elis III 1 August 2016
Laboratory Report No.	1607107	Laboratory	Eurofins-Air Toxics/Folsom, CA
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15	
Samples and Matrix	Three air samples		
Field Duplicate Pairs	None		
Field Blanks	None		

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Within	
Criteria	Exceedance/Notes
Υ	
nitial Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/Notes
Υ	
ontinuing Calibration:	
Within	Exceedance/Notes
Criteria	
Υ	
alibration Verification:	
Within	Exceedance/Notes
Criteria	Litteedance/Notes
Υ	
lethod blanks:	
Within	Evene denne /Netes
Criteria	Exceedance/Notes
Υ	

Exceedance/Notes



Field blanks:
Within

Criteria NA

Interference	Check Sam	ples (ICS)	(ICP	metals only	/):
--------------	-----------	------------	------	-------------	-----

Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within	Exceedance/Notes
Criteria	Exceedance/ Notes
NA	



Field duplicates:

Within Criteria	Exceedance/Notes
NA	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Υ	

Sample dilutions:

Within Criteria			Exceedance/Notes	
Υ	1.71x: GRPCE-01-IA- 1.75x: GRPCE-01-IA-	(BASEMENT) (BASEMENT)	1.79x: GRPCE-01-IA-	(MAIN)

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
Υ	



Target analyte identification	Target	analy	vte i	iden	tifica	ition
-------------------------------	--------	-------	-------	------	--------	-------

Within Criteria	Exceedance/Notes
Υ	
nalyte qua	ntitation and MDLs/RLs:
Within	
Criteria	Exceedance/Notes

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

Other [specify].	
Within	Evenedance/Notes
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.



CLIENTSAMPID	SAMPDATETIME	COMPOUND NAME	RESULTS	DATAFLAGS	REPLMT	UNITS	VALRESULTS	VALFLAGS
GRPCE-01-IA- (BASEMENT)	07/06/2016 16:42	Vinyl Chloride		ND	0.17	PPBV	0.17	U
GRPCE-01-IA- (BASEMENT)	07/06/2016 16:42	trans-1,2-Dichloroethene		ND	0.17	PPBV	0.17	U
GRPCE-01-IA- (BASEMENT)	07/06/2016 16:42	cis-1,2-Dichloroethene		ND	0.17	PPBV	0.17	U
GRPCE-01-IA- (BASEMENT)	07/06/2016 16:42	Trichloroethene		ND	0.17	PPBV	0.17	U
GRPCE-01-IA- (BASEMENT)	07/06/2016 16:42	Tetrachloroethene	0.79		0.17	PPBV	0.79	
GRPCE-01-IA- (BASEMENT)	07/06/2016 16:42	Vinyl Chloride		ND	0.44	UG/M3	0.44	U
GRPCE-01-IA- (BASEMENT)	07/06/2016 16:42	trans-1,2-Dichloroethene		ND	0.68	UG/M3	0.68	U
GRPCE-01-IA- (BASEMENT)	07/06/2016 16:42	cis-1,2-Dichloroethene		ND	0.68	UG/M3	0.68	U
GRPCE-01-IA- (BASEMENT)	07/06/2016 16:42	Trichloroethene		ND	0.92	UG/M3	0.92	U
GRPCE-01-IA- (BASEMENT)	07/06/2016 16:42	Tetrachloroethene	5.3		1.2	UG/M3	5.3	
GRPCE-01-IA- (MAIN)	07/06/2016 16:37	Vinyl Chloride		ND	0.18	PPBV	0.18	U
GRPCE-01-IA- (MAIN)	07/06/2016 16:37	trans-1,2-Dichloroethene		ND	0.18	PPBV	0.18	U
GRPCE-01-IA- (MAIN)	07/06/2016 16:37	cis-1,2-Dichloroethene		ND	0.18	PPBV	0.18	U
GRPCE-01-IA- (MAIN)	07/06/2016 16:37	Trichloroethene		ND	0.18	PPBV	0.18	U
GRPCE-01-IA- (MAIN)	07/06/2016 16:37	Tetrachloroethene	1.2		0.18	PPBV	1.2	
GRPCE-01-IA- (MAIN)	07/06/2016 16:37	Vinyl Chloride		ND	0.46	UG/M3	0.46	U
GRPCE-01-IA- (MAIN)	07/06/2016 16:37	trans-1,2-Dichloroethene		ND	0.71	UG/M3	0.71	U
GRPCE-01-IA- (MAIN)	07/06/2016 16:37	cis-1,2-Dichloroethene		ND	0.71	UG/M3	0.71	U
GRPCE-01-IA- (MAIN)	07/06/2016 16:37	Trichloroethene		ND	0.96	UG/M3	0.96	U
GRPCE-01-IA- (MAIN)	07/06/2016 16:37	Tetrachloroethene	8.5		1.2	UG/M3	8.5	
GRPCE-01-IA- (BASEMENT)	07/06/2016 16:39	Vinyl Chloride		ND	0.18	PPBV	0.18	U
GRPCE-01-IA- (BASEMENT)	07/06/2016 16:39	trans-1,2-Dichloroethene		ND	0.18	PPBV	0.18	U
GRPCE-01-IA- (BASEMENT)	07/06/2016 16:39	cis-1,2-Dichloroethene		ND	0.18	PPBV	0.18	U
GRPCE-01-IA- (BASEMENT)	07/06/2016 16:39	Trichloroethene		ND	0.18	PPBV	0.18	U
GRPCE-01-IA- (BASEMENT)	07/06/2016 16:39	Tetrachloroethene	7.6		0.18	PPBV	7.6	
GRPCE-01-IA- (BASEMENT)	07/06/2016 16:39	Vinyl Chloride		ND	0.45	UG/M3	0.45	U
GRPCE-01-IA- (BASEMENT)	07/06/2016 16:39	trans-1,2-Dichloroethene		ND	0.69	UG/M3	0.69	U
GRPCE-01-IA- (BASEMENT)	07/06/2016 16:39	cis-1,2-Dichloroethene		ND	0.69	UG/M3	0.69	U
GRPCE-01-IA- (BASEMENT)	07/06/2016 16:39	Trichloroethene		ND	0.94	UG/M3	0.94	U
GRPCE-01-IA- (BASEMENT)	07/06/2016 16:39	Tetrachloroethene	52		1.2	UG/M3	52	

Site Name	Grand Rapids VI ER	TDD No.	\$05-0001-1605-010
Document Tracking No.	0974B	1221101	303-0001-1603-010
Data Reviewer (signature and date)	Jeoaca a. Vickers July 29, 2016	Technical Reviewer (signature and date)	Hang N. Elis III. 1 August 2016
Laboratory Report No.	1607264	Laboratory	Eurofins-Air Toxics/Folsom, CA
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15	
Samples and Matrix	Two air samples		
Field Duplicate Pairs	None		
Field Blanks	None		

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Within	
Criteria	Exceedance/Notes
Υ	
nitial Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/Notes
Υ	
ontinuing Calibration:	
Within	Exceedance/Notes
Criteria	
Υ	
alibration Verification:	
Within	Exceedance/Notes
Criteria	Litteedance/Notes
Υ	
lethod blanks:	
Within	Evene denne /Netes
Criteria	Exceedance/Notes
Υ	

Exceedance/Notes



Field blanks:
Within

Criteria NA

Interference	Check Sam	ples (ICS)	(ICP	metals only	/):
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Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within	Exceedance/Notes
Criteria	Exceedance/ Notes
NA	



		EI A REGION	SSIARI CONTRACT	
Field dupli	icates:			
Within			Exceedance/Notes	
Criteria			Exceedance/Notes	
NA				
1 CC ~ /1 CCD				
LCSs/LCSD	98:			
Within			Exceedance/Notes	
Criteria				
Υ				
Sample dil	lutions:			
Within				
Criteria			Exceedance/Notes	
Υ	1.74x: GRPCE-02-IA-	(MAIN)	1.78x: GRPCE-02-IA-	(Basement)
	<u> </u>			
	ion and reanalysis:			
Within			Exceedance/Notes	
Criteria				
NA				
6		N.C		
	lumn confirmation (GC and H	2LC analyses only):		
Within			Exceedance/Notes	
Criteria			•	
NA				
Internal St	tandards:			
Within			Fuccadones/Notes	
Criteria			Exceedance/Notes	



Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	Results between the method detection limit and the reporting limit were qualified as estimated (J) by the laboratory.

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

other labe	···· / J.
Within	Even adams / Notes
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.



CLIENTSAMPID		COMPOUND NAME	RESULTS	DATAFLAGS	REPLMT	UNITS	VALRESULTS	VALFLAGS
GRPCE-02-IA-	(Basement)	Vinyl Chloride		ND	0.18	PPBV	0.18	U
GRPCE-02-IA-	(Basement)	trans-1,2-Dichloroethene		ND	0.18	PPBV	0.18	U
GRPCE-02-IA-	(Basement)	cis-1,2-Dichloroethene	0.055	J	0.18	PPBV	0.055	J
GRPCE-02-IA-	(Basement)	Trichloroethene		ND	0.18	PPBV	0.18	U
GRPCE-02-IA-	(Basement)	Tetrachloroethene	1.0		0.18	PPBV	1.0	
GRPCE-02-IA-	(Basement)	Vinyl Chloride		ND	0.46	UG/M3	0.46	U
GRPCE-02-IA-	(Basement)	trans-1,2-Dichloroethene		ND	0.70	UG/M3	0.70	U
GRPCE-02-IA-	(Basement)	cis-1,2-Dichloroethene	0.22	J	0.70	UG/M3	0.22	J
GRPCE-02-IA-	(Basement)	Trichloroethene		ND	0.96	UG/M3	0.96	U
GRPCE-02-IA-	(Basement)	Tetrachloroethene	7.1		1.2	UG/M3	7.1	
GRPCE-02-IA-	(MAIN)	Vinyl Chloride		ND	0.17	PPBV	0.17	U
GRPCE-02-IA-	(MAIN)	trans-1,2-Dichloroethene		ND	0.17	PPBV	0.17	U
GRPCE-02-IA-	(MAIN)	cis-1,2-Dichloroethene		ND	0.17	PPBV	0.17	U
GRPCE-02-IA-	(MAIN)	Trichloroethene	0.10	J	0.17	PPBV	0.10	J
GRPCE-02-IA-	(MAIN)	Tetrachloroethene	0.34		0.17	PPBV	0.34	
GRPCE-02-IA-	(MAIN)	Vinyl Chloride		ND	0.44	UG/M3	0.44	U
GRPCE-02-IA-	(MAIN)	trans-1,2-Dichloroethene		ND	0.69	UG/M3	0.69	U
GRPCE-02-IA-	(MAIN)	cis-1,2-Dichloroethene		ND	0.69	UG/M3	0.69	U
GRPCE-02-IA-	(MAIN)	Trichloroethene	0.54	J	0.94	UG/M3	0.54	J
GRPCE-02-IA-	(MAIN)	Tetrachloroethene	2.3		1.2	UG/M3	2.3	

Site Name	Grand Rapids VI ER		TDD No.	S05-0001-1605-010
Document Tracking No.	0974C			303-0001-1603-010
Data Reviewer (signature and date)	Jesaca a. Vickers July 29	, 2016	Technical Reviewer (signature and date)	Hang N. Elis II 1 August 2016
Laboratory Report No.	1607335		Laboratory	Eurofins-Air Toxics/Folsom, CA
Analyses	Volatile organic compounds (VOCs	s) by EPA N	1ethod TO-15	
Samples and Matrix	Eleven air samples (including two	field duplic	cates)	
Field Duplicate Pairs	_		irpce-02-IA- pce-02-IA-	(Basement-W)-DP and (Main-Conf.)-DP
Field Blanks	None			

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Within	
Criteria	Exceedance/Notes
Υ	
nitial Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/Notes
Υ	
ontinuing Calibration:	
Within	Exceedance/Notes
Criteria	
Υ	
alibration Verification:	
Within	Exceedance/Notes
Criteria	Litteedance/Notes
Υ	
lethod blanks:	
Within	Evene denne /Netes
Criteria	Exceedance/Notes
Υ	

Exceedance/Notes



Field blanks:
Within

Criteria NA

Interference	Check Sam	ples (ICS)	(ICP	metals only	/):
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Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within	Evenedance/Notes
Criteria	Exceedance/Notes
NA	



Field duplicates:

Within Criteria	Exceedance/Notes
Υ	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Υ	

Sample dilutions:

Within Criteria	Exceedance/Notes			
	1.58x: GRPCE-02-IA- GRPCE-02-IA-	(Basement-S), GRPCE-02-IA-(Main-SFR)	(Main-Common), and	I
Y	1.64x: GRPCE-02-IA- GRPCE-02-IA-	(Basement-W)-DP, GRPCE-02-L (Main-Conf.)-DP	A- (Main-Conf.), and	d
	1.68x: GRPCE-02-IA-	(2 nd -N)		
	1.75x: GRPCE-02-IA-	(Basement-W)	2.06x: GRPCE-02-IA-	(2 nd -W)
	1.87x: GRPCE-02-IA-	(2 nd -S)	2.17x: GRPCE-02-IA-	(Basement-N)

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
Υ	

Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	Results between the method detection limit and the reporting limit were qualified as estimated (J) by the laboratory.

Tentatively identified compounds:

	,
Within	Evenedance/Notes
Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

oystem pe	your performance and moraline ordanity.								
Within	Evenedance/Notes								
Criteria	Exceedance/Notes								
Υ									

Other [specify]:

Other Laber	siry J.
Within	Evene dense /Notes
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.



CLIENTSAMPID		COMPOUND NAME	RESULTS	DATAFLAGS	REPLMT	UNITS	VALRESULTS	VALFLAGS
GRPCE-02-IA-	(2nd-N)	Vinyl Chloride		ND	0.17	PPBV	0.17	U
GRPCE-02-IA-	(2nd-N)	trans-1,2-Dichloroethene		ND	0.17	PPBV	0.17	U
GRPCE-02-IA-	(2nd-N)	cis-1,2-Dichloroethene		ND	0.17	PPBV	0.17	U
GRPCE-02-IA-	(2nd-N)	Trichloroethene		ND	0.17	PPBV	0.17	U
GRPCE-02-IA-	(2nd-N)	Tetrachloroethene	1.4		0.17	PPBV	1.4	
GRPCE-02-IA-	(2nd-N)	Vinyl Chloride		ND	0.43	UG/M3	0.43	U
GRPCE-02-IA-	(2nd-N)	trans-1,2-Dichloroethene		ND	0.67	UG/M3	0.67	U
GRPCE-02-IA-	(2nd-N)	cis-1,2-Dichloroethene		ND	0.67	UG/M3	0.67	U
GRPCE-02-IA-	(2nd-N)	Trichloroethene		ND	0.90	UG/M3	0.90	U
GRPCE-02-IA-	(2nd-N)	Tetrachloroethene	9.4		1.1	UG/M3	9.4	
GRPCE-02-IA-	(2nd-S)	Vinyl Chloride		ND	0.19	PPBV	0.19	U
GRPCE-02-IA-	(2nd-S)	trans-1,2-Dichloroethene		ND	0.19	PPBV	0.19	U
GRPCE-02-IA-	(2nd-S)	cis-1,2-Dichloroethene		ND	0.19	PPBV	0.19	U
GRPCE-02-IA-	(2nd-S)	Trichloroethene		ND	0.19	PPBV	0.19	U
GRPCE-02-IA-	(2nd-S)	Tetrachloroethene	1.5		0.19	PPBV	1.5	
GRPCE-02-IA-	(2nd-S)	Vinyl Chloride		ND	0.48	UG/M3	0.48	U
GRPCE-02-IA-	(2nd-S)	trans-1,2-Dichloroethene		ND	0.74	UG/M3	0.74	U
GRPCE-02-IA-	(2nd-S)	cis-1,2-Dichloroethene		ND	0.74	UG/M3	0.74	U
GRPCE-02-IA-	(2nd-S)	Trichloroethene		ND	1.0	UG/M3	1.0	U
GRPCE-02-IA-	(2nd-S)	Tetrachloroethene	10		1.3	UG/M3	10	
GRPCE-02-IA-	(2nd-W)	Vinyl Chloride		ND	0.21	PPBV	0.21	U
GRPCE-02-IA-	(2nd-W)	trans-1,2-Dichloroethene		ND	0.21	PPBV	0.21	U
GRPCE-02-IA-	(2nd-W)	cis-1,2-Dichloroethene		ND	0.21	PPBV	0.21	U
GRPCE-02-IA-	(2nd-W)	Trichloroethene		ND	0.21	PPBV	0.21	U
GRPCE-02-IA-	(2nd-W)	Tetrachloroethene	1.1		0.21	PPBV	1.1	
GRPCE-02-IA-	(2nd-W)	Vinyl Chloride		ND	0.53	UG/M3	0.53	U
GRPCE-02-IA-	(2nd-W)	trans-1,2-Dichloroethene		ND	0.82	UG/M3	0.82	U
GRPCE-02-IA-	(2nd-W)	cis-1,2-Dichloroethene		ND	0.82	UG/M3	0.82	U
GRPCE-02-IA-	(2nd-W)	Trichloroethene		ND	1.1	UG/M3	1.1	U
GRPCE-02-IA-	(2nd-W)	Tetrachloroethene	7.7		1.4	UG/M3	7.7	
GRPCE-02-IA-	(Main-Conf.)	Vinyl Chloride		ND	0.16	PPBV	0.16	U

CLIENTSAMPID		COMPOUND NAME	RESULTS	DATAFLAGS	REPLMT	UNITS	VALRESULTS	VALFLAGS
GRPCE-02-IA-	(Main-Conf.)	trans-1,2-Dichloroethene		ND	0.16	PPBV	0.16	U
GRPCE-02-IA-	(Main-Conf.)	cis-1,2-Dichloroethene		ND	0.16	PPBV	0.16	U
GRPCE-02-IA-	(Main-Conf.)	Trichloroethene	0.060	J	0.16	PPBV	0.060	J
GRPCE-02-IA-	(Main-Conf.)	Tetrachloroethene	9.2		0.16	PPBV	9.2	
GRPCE-02-IA-	(Main-Conf.)	Vinyl Chloride		ND	0.42	UG/M3	0.42	U
GRPCE-02-IA-	(Main-Conf.)	trans-1,2-Dichloroethene		ND	0.65	UG/M3	0.65	U
GRPCE-02-IA-	(Main-Conf.)	cis-1,2-Dichloroethene		ND	0.65	UG/M3	0.65	U
GRPCE-02-IA-	(Main-Conf.)	Trichloroethene	0.32	J	0.88	UG/M3	0.32	J
GRPCE-02-IA-	(Main-Conf.)	Tetrachloroethene	63		1.1	UG/M3	63	
GRPCE-02-IA-	(Main-Conf.)-DP	Vinyl Chloride		ND	0.16	PPBV	0.16	U
GRPCE-02-IA-	(Main-Conf.)-DP	trans-1,2-Dichloroethene		ND	0.16	PPBV	0.16	U
GRPCE-02-IA-	(Main-Conf.)-DP	cis-1,2-Dichloroethene		ND	0.16	PPBV	0.16	U
GRPCE-02-IA-	(Main-Conf.)-DP	Trichloroethene	0.059	J	0.16	PPBV	0.059	J
GRPCE-02-IA-	(Main-Conf.)-DP	Tetrachloroethene	8.6		0.16	PPBV	8.6	
GRPCE-02-IA-	(Main-Conf.)-DP	Vinyl Chloride		ND	0.42	UG/M3	0.42	U
GRPCE-02-IA-	(Main-Conf.)-DP	trans-1,2-Dichloroethene		ND	0.65	UG/M3	0.65	U
GRPCE-02-IA-	(Main-Conf.)-DP	cis-1,2-Dichloroethene		ND	0.65	UG/M3	0.65	U
GRPCE-02-IA-	(Main-Conf.)-DP	Trichloroethene	0.32	J	0.88	UG/M3	0.32	J
GRPCE-02-IA-	(Main-Conf.)-DP	Tetrachloroethene	58		1.1	UG/M3	58	
GRPCE-02-IA-	(Main-Common)	Vinyl Chloride		ND	0.16	PPBV	0.16	U
GRPCE-02-IA-	(Main-Common)	trans-1,2-Dichloroethene	0.066	J	0.16	PPBV	0.066	J
GRPCE-02-IA-	(Main-Common)	cis-1,2-Dichloroethene		ND	0.16	PPBV	0.16	U
GRPCE-02-IA-	(Main-Common)	Trichloroethene	0.056	J	0.16	PPBV	0.056	J
GRPCE-02-IA-	(Main-Common)	Tetrachloroethene	7.8		0.16	PPBV	7.8	
GRPCE-02-IA-	(Main-Common)	Vinyl Chloride		ND	0.40	UG/M3	0.40	U
GRPCE-02-IA-	(Main-Common)	trans-1,2-Dichloroethene	0.26	J	0.63	UG/M3	0.26	J
GRPCE-02-IA-	(Main-Common)	cis-1,2-Dichloroethene		ND	0.63	UG/M3	0.63	U
GRPCE-02-IA-	(Main-Common)	Trichloroethene	0.30	J	0.85	UG/M3	0.30	J
GRPCE-02-IA-	(Main-Common)	Tetrachloroethene	53		1.1	UG/M3	53	
GRPCE-02-IA-	(Main-SFR)	Vinyl Chloride		ND	0.16	PPBV	0.16	U
GRPCE-02-IA-	(Main-SFR)	trans-1,2-Dichloroethene	0.065	J	0.16	PPBV	0.065	J

CLIENTSAMPID		COMPOUND NAME	RESULTS	DATAFLAGS	REPLMT	UNITS	VALRESULTS	VALFLAGS
GRPCE-02-IA-	(Main-SFR)	cis-1,2-Dichloroethene		ND	0.16	PPBV	0.16	U
GRPCE-02-IA-	(Main-SFR)	Trichloroethene	0.22		0.16	PPBV	0.22	
GRPCE-02-IA-	(Main-SFR)	Tetrachloroethene	4.9		0.16	PPBV	4.9	
GRPCE-02-IA-	(Main-SFR)	Vinyl Chloride		ND	0.40	UG/M3	0.40	U
GRPCE-02-IA-	(Main-SFR)	trans-1,2-Dichloroethene	0.26	J	0.63	UG/M3	0.26	J
GRPCE-02-IA-	(Main-SFR)	cis-1,2-Dichloroethene		ND	0.63	UG/M3	0.63	U
GRPCE-02-IA-	(Main-SFR)	Trichloroethene	1.2		0.85	UG/M3	1.2	
GRPCE-02-IA-	(Main-SFR)	Tetrachloroethene	33		1.1	UG/M3	33	
GRPCE-02-IA-	(Basement-S)	Vinyl Chloride		ND	0.16	PPBV	0.16	U
GRPCE-02-IA-	(Basement-S)	trans-1,2-Dichloroethene	0.092	J	0.16	PPBV	0.092	J
GRPCE-02-IA-	(Basement-S)	cis-1,2-Dichloroethene		ND	0.16	PPBV	0.16	U
GRPCE-02-IA-	(Basement-S)	Trichloroethene	0.15	J	0.16	PPBV	0.15	J
GRPCE-02-IA-	(Basement-S)	Tetrachloroethene	25		0.16	PPBV	25	
GRPCE-02-IA-	(Basement-S)	Vinyl Chloride		ND	0.40	UG/M3	0.40	U
GRPCE-02-IA-	(Basement-S)	trans-1,2-Dichloroethene	0.36	J	0.63	UG/M3	0.36	J
GRPCE-02-IA-	(Basement-S)	cis-1,2-Dichloroethene		ND	0.63	UG/M3	0.63	U
GRPCE-02-IA-	(Basement-S)	Trichloroethene	0.79	J	0.85	UG/M3	0.79	J
GRPCE-02-IA-	(Basement-S)	Tetrachloroethene	170		1.1	UG/M3	170	
GRPCE-02-IA-	(Basement-N)	Vinyl Chloride		ND	0.22	PPBV	0.22	U
GRPCE-02-IA-	(Basement-N)	trans-1,2-Dichloroethene		ND	0.22	PPBV	0.22	U
GRPCE-02-IA-	(Basement-N)	cis-1,2-Dichloroethene		ND	0.22	PPBV	0.22	U
GRPCE-02-IA-	(Basement-N)	Trichloroethene	0.20	J	0.22	PPBV	0.20	J
GRPCE-02-IA-	(Basement-N)	Tetrachloroethene	32		0.22	PPBV	32	
GRPCE-02-IA-	(Basement-N)	Vinyl Chloride		ND	0.55	UG/M3	0.55	U
GRPCE-02-IA-	(Basement-N)	trans-1,2-Dichloroethene		ND	0.86	UG/M3	0.86	U
GRPCE-02-IA-	(Basement-N)	cis-1,2-Dichloroethene		ND	0.86	UG/M3	0.86	U
GRPCE-02-IA-	(Basement-N)	Trichloroethene	1.1	J	1.2	UG/M3	1.1	J
GRPCE-02-IA-	(Basement-N)	Tetrachloroethene	220		1.5	UG/M3	220	
GRPCE-02-IA-	(Basement-W)	Vinyl Chloride		ND	0.18	PPBV	0.18	U
GRPCE-02-IA-	(Basement-W)	trans-1,2-Dichloroethene		ND	0.18	PPBV	0.18	U
GRPCE-02-IA-	(Basement-W)	cis-1,2-Dichloroethene		ND	0.18	PPBV	0.18	U

CLIENTSAMPID		COMPOUND NAME	RESULTS	DATAFLAGS	REPLMT	UNITS	VALRESULTS	VALFLAGS
GRPCE-02-IA- (Base	ement-W)	Trichloroethene	0.096	J	0.18	PPBV	0.096	J
GRPCE-02-IA- (Base	ement-W)	Tetrachloroethene	14		0.18	PPBV	14	
GRPCE-02-IA- (Base	ement-W)	Vinyl Chloride		ND	0.45	UG/M3	0.45	U
GRPCE-02-IA- (Base	ement-W)	trans-1,2-Dichloroethene		ND	0.69	UG/M3	0.69	U
GRPCE-02-IA- (Base	ement-W)	cis-1,2-Dichloroethene		ND	0.69	UG/M3	0.69	U
GRPCE-02-IA- (Base	ement-W)	Trichloroethene	0.52	J	0.94	UG/M3	0.52	J
GRPCE-02-IA-	ement-W)	Tetrachloroethene	94		1.2	UG/M3	94	
GRPCE-02-IA- (Base	ment-W)-DP	Vinyl Chloride		ND	0.16	PPBV	0.16	U
GRPCE-02-IA- (Base	ment-W)-DP	trans-1,2-Dichloroethene		ND	0.16	PPBV	0.16	U
GRPCE-02-IA- (Base	ment-W)-DP	cis-1,2-Dichloroethene		ND	0.16	PPBV	0.16	U
GRPCE-02-IA- (Base	ement-W)-DP	Trichloroethene	0.081	J	0.16	PPBV	0.081	J
GRPCE-02-IA- (Base	ement-W)-DP	Tetrachloroethene	14		0.16	PPBV	14	
GRPCE-02-IA- (Base	ment-W)-DP	Vinyl Chloride		ND	0.42	UG/M3	0.42	U
GRPCE-02-IA- (Base	ment-W)-DP	trans-1,2-Dichloroethene		ND	0.65	UG/M3	0.65	U
GRPCE-02-IA- (Base	ment-W)-DP	cis-1,2-Dichloroethene		ND	0.65	UG/M3	0.65	U
GRPCE-02-IA- (Base	ment-W)-DP	Trichloroethene	0.43	J	0.88	UG/M3	0.43	J
GRPCE-02-IA-	ement-W)-DP	Tetrachloroethene	95		1.1	UG/M3	95	



August 3, 2016

Betsy Nightingale On-Scene Coordinator U.S. Environmental Protection Agency Region 5 9311 Groh Road Grosse Ile, MI 48138-1697

Subject: Data Validation Report

Grand Rapids VI ER

EPA Contract No. EP-S5-13-01

Technical Direction Document No. S05-0001-1605-010

Document Tracking No. 0989

Dear Ms. Nightingale:

Tetra Tech Inc. (Tetra Tech) is submitting this Data Validation Report for five air samples collected at the Grand Rapids VI ER site. The samples were collected on July 27, 2016 and were analyzed for volatile organic compounds by ALS Environmental. Tetra Tech received the data on August 2, 2016.

Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines* (NFG) for Superfund Organic Methods Data Review (August 2014).

No rejection of results was required for this data set. The data is usable as qualified based on the exceedances discussed in this validation.

If you have any questions regarding this Data Validation Report, please call me at (662) 681-5727.

Sincerely,

Jessica A. Vickers START Chemist

Enclosure

cc: Kevin Scott, Tetra Tech Program Manager

Michael Browning, Tetra Tech Project Manager

TDD File

Jesaca a Vickers

ATTACHMENT 1 DATA VALIDATION REPORT ALS SDG P1603725

Site Name	Grand Rapids VI ER		DD No.	SOF 0001 160F 010			
Document Tracking No.	0989	טו		S05-0001-1605-010			
Data Reviewer (signature and date)	Jeoaca a. Vickers August 3, 2016		echnical Reviewer ignature and date)	Hang N. Elis III 3 August 2016			
Laboratory Report No.	P1603725 La		boratory	ALS Laboratories/Simi Valley, CA			
Analyses	Volatile organic compounds (VOCs) by EPA	Metho	od TO-15				
Samples and Matrix Five air samples							
Field Duplicate Pairs	None						
Field Blanks	None						

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection of results was required for this data set. The data is usable as qualified based on the findings of this validation.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrument Performance Checks:

/ithin riteria	Exceedance/Notes
Υ	

Initial Calibration:

Within Criteria	Exceedance/Notes
N	The percent relative standard deviation exceeded the acceptance criterion for trans-1,2-dichloroethene; therefore, the associated results were qualified as estimated (J for detects and UJ for non-detects).

Continuing Calibration:

Within Criteria	Exceedance/Notes
Υ	

Calibration Verification:

Within Criteria	Exceedance/Notes
Υ	

Method blanks:

١	Within	Exceedance/Notes
(Criteria	Exceedance/ Notes
	Υ	

Field blanks:

Within Criteria	Exceedance/Notes
NA	



Interference	Check Sam	ples (ICS)	(ICP	metals only	/):
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Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
Y	



Field duplicates:

Within Criteria	Exceedance/Notes
NA	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Υ	

Sample dilutions:

Within Criteria		Exceedance/Notes
	1.34x: VOCs except tetrachloroethene for GRPCE-01-IA-	(Basement-Storage Rm)
	1.37x: VOCs for GRPCE-03-IA- (2 nd Floor-S)	
	1.55x: VOCs except tetrachloroethene for GRPCE-03-IA-	(Basement-N)
Υ	1.66x: VOCs for GRPCE-03-IA- (Basement)	
	1.68x: VOCs for GRPCE-03-IA- (Main)	
	13.4x: tetrachloroethene for GRPCE-01-IA-	(Basement-Storage Rm)
	15.5x: tetrachloroethene for GRPCE-03-IA-	(Basement-N)

Re-extraction and reanalysis:

Within Criteria	Fxceedance/Notes
NA	

Second column confirmation (GC and HPLC analyses only):

Within Criteria	Exceedance/Notes
NA	



Internal Standards:

Within Criteria	Exceedance/Notes
Υ	

Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	

Tentatively identified compounds:

	,
Within	Evenedance/Notes
Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

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.



ANALYTICAL RESULTS SUMMARY ALS REPORT NO. P1603725

Samp_No		Analyte	Result Result_Qua	l MDL	RL Units	Val_Result Val_Qual
GRPCE-01-IA-	(Basement-Storage Rm)	cis-1,2-Dichloroethene	0.046	0.031	0.034 ppbV	0.046
GRPCE-01-IA-	(Basement-Storage Rm)	Tetrachloroethene	42 D	0.14	0.2 ppbV	42
GRPCE-01-IA-	(Basement-Storage Rm)	trans-1,2-Dichloroethene	0.068	0.031	0.034 ppbV	0.068 J
GRPCE-01-IA-	(Basement-Storage Rm)	Trichloroethene (TCE)	0.23	0.022	0.025 ppbV	0.23
GRPCE-01-IA-	(Basement-Storage Rm)	Vinyl Chloride	0.052 U	0.05	0.052 ppbV	0.052 U
GRPCE-01-IA-	(Basement-Storage Rm)	cis-1,2-Dichloroethene	0.18	0.12	0.13 ug/m3	0.18
GRPCE-01-IA-	(Basement-Storage Rm)	Tetrachloroethene	280 D	0.96	1.3 ug/m3	280
GRPCE-01-IA-	(Basement-Storage Rm)	trans-1,2-Dichloroethene	0.27	0.12	0.13 ug/m3	0.27 J
GRPCE-01-IA-	(Basement-Storage Rm)	Trichloroethene (TCE)	1.2	0.12	0.13 ug/m3	1.2
GRPCE-01-IA-	(Basement-Storage Rm)	Vinyl Chloride	0.13 U	0.13	0.13 ug/m3	0.13 U
GRPCE-03-IA-	(Basement)	cis-1,2-Dichloroethene	0.042 U	0.039	0.042 ppbV	0.042 U
GRPCE-03-IA-	(Basement)	Tetrachloroethene	0.32	0.018	0.024 ppbV	0.32
GRPCE-03-IA-	(Basement)	trans-1,2-Dichloroethene	0.042 U	0.038	0.042 ppbV	0.042 UJ
GRPCE-03-IA-	(Basement)	Trichloroethene (TCE)	0.031 U	0.028	0.031 ppbV	0.031 U
GRPCE-03-IA-	(Basement)	Vinyl Chloride	0.065 U	0.062	0.065 ppbV	0.065 U
GRPCE-03-IA-	(Basement)	cis-1,2-Dichloroethene	0.17 U	0.15	0.17 ug/m3	0.17 U
GRPCE-03-IA-	(Basement)	Tetrachloroethene	2.2	0.12	0.17 ug/m3	2.2
GRPCE-03-IA-	(Basement)	trans-1,2-Dichloroethene	0.17 U	0.15	0.17 ug/m3	0.17 UJ
GRPCE-03-IA-	(Basement)	Trichloroethene (TCE)	0.17 U	0.15	0.17 ug/m3	0.17 U
GRPCE-03-IA-	(Basement)	Vinyl Chloride	0.17 U	0.16	0.17 ug/m3	0.17 U
GRPCE-03-IA-	(Main)	cis-1,2-Dichloroethene	0.042 U	0.039	0.042 ppbV	0.042 U
GRPCE-03-IA-	(Main)	Tetrachloroethene	0.07	0.018	0.025 ppbV	0.07
GRPCE-03-IA-	(Main)	trans-1,2-Dichloroethene	0.047	0.039	0.042 ppbV	0.047 J
GRPCE-03-IA-	(Main)	Trichloroethene (TCE)	0.031 U	0.028	0.031 ppbV	0.031 U
GRPCE-03-IA-	(Main)	Vinyl Chloride	0.066 U	0.062	0.066 ppbV	0.066 U
GRPCE-03-IA-	(Main)	cis-1,2-Dichloroethene	0.17 U	0.15	0.17 ug/m3	0.17 U
GRPCE-03-IA-	(Main)	Tetrachloroethene	0.47	0.12	0.17 ug/m3	0.47
GRPCE-03-IA-	(Main)	trans-1,2-Dichloroethene	0.19	0.15	0.17 ug/m3	0.19 J
GRPCE-03-IA-	(Main)	Trichloroethene (TCE)	0.17 U	0.15	0.17 ug/m3	0.17 U
GRPCE-03-IA-	(Main)	Vinyl Chloride	0.17 U	0.16	0.17 ug/m3	0.17 U
GRPCE-03-IA-	(2nd Floor -S)	cis-1,2-Dichloroethene	0.035 U	0.032	0.035 ppbV	0.035 U
GRPCE-03-IA-	(2nd Floor -S)	Tetrachloroethene	1.7	0.015	0.02 ppbV	1.7
GRPCE-03-IA-	(2nd Floor -S)	trans-1,2-Dichloroethene	0.035 U	0.031	0.035 ppbV	0.035 UJ
GRPCE-03-IA-	(2nd Floor -S)	Trichloroethene (TCE)	0.027	0.023	0.026 ppbV	0.027
GRPCE-03-IA-	(2nd Floor -S)	Vinyl Chloride	0.054 U	0.051	0.054 ppbV	0.054 U

ANALYTICAL RESULTS SUMMARY ALS REPORT NO. P1603725

Samp_No		Analyte	Result Result_Qual	MDL	RL Units	Val_Result Val_Qual
GRPCE-03-IA-	(2nd Floor -S)	cis-1,2-Dichloroethene	0.14 U	0.13	0.14 ug/m3	0.14 U
GRPCE-03-IA-	(2nd Floor -S)	Tetrachloroethene	12	0.099	0.14 ug/m3	12
GRPCE-03-IA-	(2nd Floor -S)	trans-1,2-Dichloroethene	0.14 U	0.12	0.14 ug/m3	0.14 UJ
GRPCE-03-IA-	(2nd Floor -S)	Trichloroethene (TCE)	0.14	0.12	0.14 ug/m3	0.14
GRPCE-03-IA-	(2nd Floor -S)	Vinyl Chloride	0.14 U	0.13	0.14 ug/m3	0.14 U
GRPCE-03-IA-	(Basement-N)	cis-1,2-Dichloroethene	0.039 U	0.036	0.039 ppbV	0.039 U
GRPCE-03-IA-	(Basement-N)	Tetrachloroethene	36 D	0.16	0.23 ppbV	36
GRPCE-03-IA-	(Basement-N)	trans-1,2-Dichloroethene	0.039 U	0.036	0.039 ppbV	0.039 UJ
GRPCE-03-IA-	(Basement-N)	Trichloroethene (TCE)	0.18	0.026	0.029 ppbV	0.18
GRPCE-03-IA-	(Basement-N)	Vinyl Chloride	0.061 U	0.058	0.061 ppbV	0.061 U
GRPCE-03-IA-	(Basement-N)	cis-1,2-Dichloroethene	0.16 U	0.14	0.16 ug/m3	0.16 U
GRPCE-03-IA-	(Basement-N)	Tetrachloroethene	250 D	1.1	1.6 ug/m3	250
GRPCE-03-IA-	(Basement-N)	trans-1,2-Dichloroethene	0.16 U	0.14	0.16 ug/m3	0.16 UJ
GRPCE-03-IA-	(Basement-N)	Trichloroethene (TCE)	0.96	0.14	0.16 ug/m3	0.96
GRPCE-03-IA-	(Basement-N)	Vinyl Chloride	0.16 U	0.15	0.16 ug/m3	0.16 U



August 9, 2016

Betsy Nightingale On-Scene Coordinator U.S. Environmental Protection Agency Region 5 9311 Groh Road Grosse Ile, MI 48138-1697

Subject: Data Validation Report

Grand Rapids VI ER

EPA Contract No. EP-S5-13-01

Technical Direction Document No. S05-0001-1605-010

Document Tracking No. 1007

Dear Ms. Nightingale:

Tetra Tech Inc. (Tetra Tech) is submitting this Data Validation Report for four air samples collected at the Grand Rapids VI ER site. The samples were collected on July 29, 2016 and were analyzed for volatile organic compounds by ALS Environmental. Tetra Tech received the data on August 4, 2016.

Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines* (NFG) for Superfund Organic Methods Data Review (August 2014).

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory. All reported results were non-detect.

If you have any questions regarding this Data Validation Report, please call me at (662) 681-5727.

Sincerely,

Jessica A. Vickers START Chemist

Enclosure

cc: Kevin Scott, Tetra Tech Program Manager

Michael Browning, Tetra Tech Project Manager

TDD File

Jesaca a Vickers

ATTACHMENT 1 DATA VALIDATION REPORT ALS SDG P1603764

Site Name	Grand Rapids VI ER	TDD No.	\$05-0001-1605-010	
Document Tracking No.	1007	TOO NO.	303-0001-1603-010	
Data Reviewer (signature and date)	Jeoaca a. Vickers August 3, 2016	Technical Reviewer (signature and date)	Hang N. Ellis II 9 August 2016	
Laboratory Report No.	P1603764	Laboratory	ALS Laboratories/Simi Valley, CA	
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15		
Samples and Matrix	Four air samples			
Field Duplicate Pairs	None			
Field Blanks	None			

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory. All reported results were non-detect.

Data completeness:

Within Criteria	Exceedance/Notes
Y	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Within	
Criteria	Exceedance/Notes
Υ	
nitial Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/Notes
Υ	
ontinuing Calibration:	
Within	Exceedance/Notes
Criteria	
Υ	
alibration Verification:	
Within	Exceedance/Notes
Criteria	Litteedance/Notes
Υ	
lethod blanks:	
Within	Evene denne /Netes
Criteria	Exceedance/Notes
Υ	

Exceedance/Notes



Field blanks:
Within

Criteria NA

Interference	Check Sam	ples (ICS)	(ICP	metals only	/):
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Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within	Exceedance/Notes
Criteria	
NA	



Field duplicates:

Within Criteria	Exceedance/Notes
NA	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Υ	

Sample dilutions:

Within Criteria			Exceedance/Notes	
V	1.73x: VOCs for GRPCE-01-IA-	(Main)	1.95x: VOCs for GRPCE-01-IA-	(Basement)
Y	1.76x: VOCs for GRPCE-01-IA-	(Basement)	2.03x: VOCs for GRPCE-01-IA-	(Main)

Re-extraction and reanalysis:

Within Criteria	Exceedance/Notes
NA	

Second column confirmation (GC and HPLC analyses only):

	, ,,
Within	Evenadones /Notes
Criteria	Exceedance/Notes
NA	

Internal Standards:

Within Criteria	Exceedance/Notes
Υ	



Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	All reported results were non-detect.

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

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.



ANALYTICAL RESULTS SUMMARY ALS ENVIRONMENTAL REPORT NO. P1603764

Samp_No		Analyte	Result Result_Qual	Result_Units	MDL	RL	Val_Result Result_Qual
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.044 U	ppbV	0.041	0.044	0.044 U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	0.026 U	ppbV	0.019	0.026	0.026 U
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.044 U	ppbV	0.04	0.044	0.044 U
GRPCE-01-IA-	(Basement)	Trichloroethene (TCE)	0.033 U	ppbV	0.029	0.033	0.033 U
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.069 U	ppbV	0.065	0.069	0.069 U
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.18 U	ug/m3	0.16	0.18	0.18 U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	0.18 U	ug/m3	0.13	0.18	0.18 U
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.18 U	ug/m3	0.16	0.18	0.18 U
GRPCE-01-IA-	(Basement)	Trichloroethene (TCE)	0.18 U	ug/m3	0.16	0.18	0.18 U
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.18 U	ug/m3	0.17	0.18	0.18 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.044 U	ppbV	0.04	0.044	0.044 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	0.026 U	ppbV	0.018	0.026	0.026 U
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.044 U	ppbV	0.04	0.044	0.044 U
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.032 U	ppbV	0.029	0.032	0.032 U
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.068 U	ppbV	0.064	0.068	0.068 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.17 U	ug/m3	0.16	0.17	0.17 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	0.17 U	ug/m3	0.12	0.17	0.17 U
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.17 U	ug/m3	0.16	0.17	0.17 U
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.17 U	ug/m3	0.15	0.17	0.17 U
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.17 U	ug/m3	0.16	0.17	0.17 U
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.049 U	ppbV	0.045	0.049	0.049 U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	0.029 U	ppbV	0.021	0.029	0.029 U
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.049 U	ppbV	0.045	0.049	0.049 U
GRPCE-01-IA-	(Basement)	Trichloroethene (TCE)	0.036 U	ppbV	0.032	0.036	0.036 U
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.076 U	ppbV	0.072	0.076	0.076 U
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.2 U	ug/m3	0.18	0.2	0.2 U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	0.2 U	ug/m3	0.14	0.2	0.2 U
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.2 U	ug/m3	0.18	0.2	0.2 U
GRPCE-01-IA-	(Basement)	Trichloroethene (TCE)	0.2 U	ug/m3	0.17	0.2	0.2 U
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.2 U	ug/m3	0.19	0.2	0.2 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.051 U	ppbV	0.047	0.051	0.051 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	0.03 U	ppbV	0.022	0.03	0.03 U
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.051 U	ppbV	0.047	0.051	0.051 U

ANALYTICAL RESULTS SUMMARY ALS ENVIRONMENTAL REPORT NO. P1603764

Samp_No		Analyte	Result Result_Qual	Result_Units	MDL	RL	Val_Result Result_Qual
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.038 U	ppbV	0.034	0.038	0.038 U
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.079 U	ppbV	0.075	0.079	0.079 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.2 U	ug/m3	0.19	0.2	0.2 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	0.2 U	ug/m3	0.15	0.2	0.2 U
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.2 U	ug/m3	0.18	0.2	0.2 U
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.2 U	ug/m3	0.18	0.2	0.2 U
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.2 U	ug/m3	0.19	0.2	0.2 U



August 10, 2016

Betsy Nightingale On-Scene Coordinator U.S. Environmental Protection Agency Region 5 9311 Groh Road Grosse Ile, MI 48138-1697

Subject: Data Validation Reports

Grand Rapids VI ER

EPA Contract No. EP-S5-13-01

Technical Direction Document No. S05-0001-1605-010

Document Tracking No. 1010

Dear Ms. Nightingale:

Tetra Tech Inc. (Tetra Tech) is submitting these Data Validation Reports for sixteen air samples (including two field duplicates) collected at the Grand Rapids VI ER site. The samples were collected on July 26 and 29, 2016 and were analyzed for volatile organic compounds by Bureau Veritas Laboratories. Tetra Tech received the final data on August 8, 2016.

Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines* (NFG) for Superfund Organic Methods Data Review (August 2014).

No rejection of results was required for this data set. The data is usable as qualified based on the findings of this validation.

If you have any questions regarding these Data Validation Reports, please call me at (662) 681-5727.

Sincerely,

Jessica A. Vickers START Chemist

Enclosure

cc: Kevin Scott, Tetra Tech Program Manager

Michael Browning, Tetra Tech Project Manager

TDD File

Jesaca a Vickers

ATTACHMENT 1

DATA VALIDATION REPORTS SDGS 16071615 AND 16071850

Site Name	Grand Rapids VI ER		TDD No.	SOE 0001 160E 010
Document Tracking No.	1010A		וטט וויס.	S05-0001-1605-010
Data Reviewer (signature and date)	Jesaca a. Vickers August 9, 2016		QC Reviewer (signature and date)	August 9, 2016
Laboratory Report No.	16071615		Laboratory	Bureau Veritas/Novi, MI
Analyses	Volatile organic compounds (VOCs) by EPA	M	ethod TO-15	
Samples and Matrix	Eight air samples (including a field duplicate	e)		
Field Duplicate Pairs GRPCE-14-IA-BASEMENT)/GRPCE		-14	4-IA-BASEMEI	NT)-DP
Field Blanks	None			

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection of results was required for this data set. The data is usable as qualified based on the findings of this validation effort.

Data completeness:

Withi Criteri	Fxcedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrument Performance Checks:

Within Criteria	Exceedance/Notes
Υ	

Initial Calibration:

Within Criteria	Exceedance/Notes
Υ	

Continuing Calibration:

Within Criteria	Exceedance/Notes
Υ	

Calibration Verification:

Within Criteria	Exceedance/Notes
NA	

Method blanks:

Within Criteria	Exceedance/Notes
N	The individual canister certification for GRPCE-14-IA-BASEMENT)-DP (canister 14582) contained a low level of trichloroethene (TCE); therefore, the TCE results for this sample were raised to the reporting limit and qualified as non-detect (U).

Field blanks:

Within Criteria	Exceedance/Notes
NA	



Interference	Check Sam	ples (ICS)	(ICP	metals only	/):
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Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within	Exceedance/Notes
Criteria	Exceedance/ Notes
NA	



	EFA REGION 5 START CONTRACT
Field duplicates:	
Within	Exceedance/Notes
Criteria	Execedance/Notes
Υ	
LCSs/LCSDs:	
Within	E In /No
Criteria	Exceedance/Notes
Υ	
Sample dilutions:	
Within	
Criteria	Exceedance/Notes
NA	
Re-extraction and reanalysis:	
Within Criteria	Exceedance/Notes
NA	
Second column confirmation (GC ar	d HPLC analyses only):
Within	Fuere device (Nietos
Criteria	Exceedance/Notes
NA	
Internal Standards:	
Within	E (Natural
Criteria	Exceedance/Notes



Target analyte identi	tication	ľ
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Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	The laboratory qualified results between the reporting limit and method detection limit as estimated (J).

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

Other labe	
Within	Even adams / Nintes
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.





Date: 28-Jul-16

Client:	TETRA TECH				
Project:	GRAND RAPIDS EMERGENCY RESPONSE	Work Order No: 16071615	16071615		
Sample Iden	atification GRPCE-14-IA-BASEMENT)	Date Sampled: 7/26/2016			
Lab Number	r: 006A	Date Received: 7/27/2016			
Sample Type	e: Air, Can	Analysis Date: 7/27/2016			
Test Method	i: EPA Method TO-15A	Analyst: DRS			
Initial Press	ure: -2.09 psig				
Final Pressu	re: -2.09 psig				
Canister ID:	: 14573				
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DI	Qual		
156-59-2	cis-1,2-Dichloroethene	0.024 (0.16U) NO 0.0061 (0.04U)			
127-18-4	Tetrachloroethene	1.7 0.036 0.27 0.25 0.0053 0.04 1			
156-60-5	trans-1,2-Dichloroethene	29 0.019 0.16 7.4 0.0049 0.04 1			
79-01-6	Trichloroethene	0.11 3 0.021 0.21 0.020 3 0 0039 0.04 1	. 8		
75-01-4	Vinyl Chloride	110 0.022 0.10 V AB 0 0088 0.04 V			



General Notes and Qualifiers:

-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



EPA Method TO-15A

Date: 28-Jul-16

Analyst: DRS

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16071615

Sample Identification GRPCE-14-IA BASEMENT)-DP Date Sampled: 7/26/2016

Lab Number: 007A Date Received: 7/27/2016

Sample Type: Air, Can Analysis Date: 7/27/2016

Initial Pressure: -2.59 psig
Final Pressure: -2.59 psig
Canister ID: 14582

Test Method:

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	NB	0.024	0.16	U) NB	0 0061	0.04 U) 1	
127-18-4	Tetrachloroethene	1.7	0.036	0.27	0.25	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	27	0.019	0.16	6.8	0.0049	0.04	1	
79-01-6	Trichloroethene	0.11	0.021	6.21	U 9:020	0.0039	0.040	V	+
75-01-4	Vinyl Chloride	Ci/f	0.022	0.10	CH+ (U	0 0088	0.04	1	



-, Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Client: TETRA TECH GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16071615 Project: Sample Identification GRPCE-14-IA Date Sampled: 7/26/2016 MAIN) 005A Date Received: 7/27/2016 Lab Number: Analysis Date: 7/27/2016 Sample Type: Air, Can Test Method: EPA Method TO-15A Analyst: DRS Initial Pressure: -1.82 psig Final Pressure: -1.82 psig Canister ID: 14579 MDL RL MDL RL Results Results DF Qual CAS# Analyte (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) (0.16 W) (0.04 U)1 156-59-2 cis-1,2-Dichloroethene 0.024 ND 0 0061 NB 0.036 0.0053 127-18-4 Tetrachloroethene 0.04 0.16 0.0049 0.04 0.019 3.2 156-60-5 trans-1,2-Dichloroethene 13 0 021 0.030 3 0.0039 0.16 3 0.21 0.04 79-01-6 Trichloroethene 0.041 0.022 0.100 ND- 0 0088 75-01-4 Vinyl Chloride ND



Date: 28-Jul-16

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

^{-;} Information not available or not applicable.



Date: 28-Jul-16

Client:	TETRA TECH	
Project:	GRAND RAPIDS EMERGENCY RESPONSE	Work Order No: 16071615
Sample Iden	ntification GRPCE-14-IA-1168(BASEMENT)	Date Sampled: 7/26/2016
Lab Number	r: 004A	Date Received: 7/27/2016
Sample Type	e: Air, Can	Analysis Date: 7/27/2016
Test Method	i: EPA Method TO-15A	Analyst: DRS
Initial Press	ure: -2.44 psig	
Final Pressu		1
Canister ID:		
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qua
156-59-2	cis-1,2-Dichloroethene	NB 0.024 (0.160) ND 0 0061 (0.040) 1
127-18-4	Tetrachloroethene	1.7 0.036 0.27 0.25 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	27 0.019 0.16 6.7 0.0049 0.04 1
79-01-6	Trichloroethene	0.054 3 0 021 0.21 0.010 3 0.0039 0.04 1
75-01-4	Vinyl Chloride	NB 0.022 (0.10) NB 0 0088 (0.04) 1



General Notes and Qualifiers:

-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Date: 28-Jul-16

Client:	TETRA TECH	
Project:	GRAND RAPIDS EMERGENCY RESPONSE	Work Order No: 16071615
Sample Iden	tification GRPCE-14-IA-	Date Sampled: 7/26/2016
Lab Number	r: 003A	Date Received: 7/27/2016
Sample Type	e: Air, Can	Analysis Date: 7/27/2016
Test Method	EPA Method TO-15A	Analyst: DRS
Initial Pressi	ure: -1.81 psig	
Final Pressu	re: -1.81 psig	
Canister ID:	: 14213	
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 (0.16U) ND 0 0061 (0.04U)
127-18-4	Tetrachloroethene	1.8 0.036 0.27 0.26 0.0053 0.04 1
156-60-5	trans-1,2-Dichlorocthene	28 0.019 0.16 7.2 0.0049 0.04 1
79-01-6	Trichloroethene	0 054 \$ 0 021 0.21 0.010 \$ 0.0039 0.04 1
75-01-4	Vinyl Chloride	NB 0 022 (0.10 U) NB 0 0088 (0.04 U) I



General Notes and Qualifiers:

-, Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

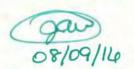
R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Date: 28-Jul-16

Client:	TETRA TECH	
Project:	GRAND RAPIDS EMERGENCY RESPONSE	Work Order No: 16071615
Sample Ide	ntification GRPCE-15-IA-	Date Sampled: 7/26/2016
Lab Numbe	er: 001A	Date Received: 7/27/2016
Sample Typ	e: Air, Can	Analysis Date: 7/27/2016
Test Metho	d: EPA Method TO-15A	Analyst: DRS
Initial Pres	sure: -2.8 psig	
Final Press	ure: -2.8 psig	
Canister II	D: 14029	
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m²) (ug/m²) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	(0.079 5 0.024 0.16 (0.020 5 0.061 0.04 1
127-18-4	Tetrachlorocthene	0.47 0.036 0.27 0.070 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	0.24 0.019 0.16 0.060 0.0049 0.04 1
79-01-6	Trichloroethene	0.11 5 0 021 0.21 0.020 0 0039 0.04 1
75-01-4	Vinyl Chloride	ND 0.022 (0.10 U) NO 0.088 (0.04 U) 1



General Notes and Qualifiers:

-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J. Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Date: 28-Jul-16

Client:	TETRA TECH								
Project:	GRAND RAPIDS EMERGENCY RESPONSE				Work Order No:		16071615		
Sample Iden	tification GRPCE-15-IA 2)				Date Sa	mpled:	7/26/201	6	
Lab Number	: 002A				Date Re	ceived:	7/27/201	6	
Sample Type	e: Air, Can				Analysi	s Date:	7/27/201	6	
Test Method	EPA Method TO-15A				A	nalyst:	DRS		
Initial Pressu	ure: -1.13 psig								
Final Pressu	re: -1.13 psig								
Canister ID:	14003								
CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	NB	0.024	0.16	U) NE	0.0061	0 04 L)1	
127-18-4	Tetrachloroethene	1.3	0.036	0.27	0.19	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	0.32	0.019	0.16	0.080	0.0049	0.04	1	
79-01-6	Trichloroethene	0.054	0.021	0.21	0.0103	0.0039		1	300
75-01-4	Vinyl Chloride	NĐ	0.022	0.10	THE CO	0 0088	0.04 L	1)1	



General Notes and Qualifiers:

-, Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Date: 28-Jul-16

Client:	TETRA TECH	
Project:	GRAND RAPIDS EMERGENCY RESPONSE	Work Order No: 16071615
Sample Iden	tification GRPCE-18-OA	Date Sampled: 7/26/2016
Lab Number	: 008A	Date Received: 7/27/2016
Sample Type	e: Air, Can	Analysis Date: 7/27/2016
Test Method	EPA Method TO-15A	Analyst: DRS
Initial Press	ure: -2.03 psig	
Final Pressu	re: -2.03 psig	
Canister ID:	13995	
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m²) (ug/m²) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 (0.16 0) ND 0 0061 (0.04 0) 1
127-18-4	Tetrachloroethene	0.27 0.036 0.27 0.040 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	0.040 3 0.019 0.16 0.010 3 0.0049 0.04 1
79-01-6 75-01-4	Trichloroethene Vinyl Chloride	0.054 J 0 021 0.21 0.010 J 0.0039 0.04 1 50 0.022 0.10 J NO 0 0088 0.04 U 1



General Notes and Qualifiers:

--; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL: Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

Site Name	Grand Rapids VI ER	TDD No.	S05-0001-1605-010		
Document Tracking No.	1010B				
Data Reviewer (signature and date)	Jeoaca a. Vickers August 9, 2016	QC Reviewer (signature and date	August 9, 2016		
Laboratory Report No.	16071850	Laboratory	Bureau Veritas/Novi, MI		
Analyses	Volatile organic compounds (VOCs) by EPA Method TO-15				
Samples and Matrix	Eight air samples (including a field duplicate)				
Field Duplicate Pairs	GRPCE-15-IA-GRPCE-15	RPCE-15-IA-			
Field Blanks	None				

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection of results was required for this data set. The data is usable as qualified based on the findings of this validation effort.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Y	
Initial Calibration:	
Within	Exceedance/Notes
Criteria	Executive y Notes
Υ	
Continuing Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Υ	
Calibration Verification:	
Within	Exceedance/Notes
Criteria	Exact durine, Notes
NA	
Method blanks:	
Within	Exceedance/Notes
Criteria	Endecadinely Notes
Υ	

Exceedance/Notes



Within

Criteria NA

Interference	Check Sam	ples (ICS)	(ICP	metals only	/):
--------------	-----------	------------	------	-------------	-----

Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within	Exceedance/Notes
Criteria	
NA	



Field duplicates:

Within Criteria	Exceedance/Notes
Υ	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
N	The LCS/LCSD displayed a relative percent difference above the acceptance limit for tetrachloroethene; therefore, the associated positive results were qualified as estimated (J).

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
Υ	



Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	The laboratory qualified results between the reporting limit and method detection limit as estimated (J).

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

other [specify].	
Within	Evenedones/Notes
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.





Date: 01-Aug-16

DF Qual

Date Received: 7/29/2016

Analysis Date: 7/30/2016

Analyst: DRS

Client: **TETRA TECH**

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16071850

Sample Identification GRPCE-15-IA-(BASEMENT) Date Sampled: 7/29/2016

Lab Number:

007A

Sample Type: Air, Can

Test Method: EPA Method TO-15A

14535

Initial Pressure: -2.22 psig Final Pressure: -2.22 psig

Canister ID:

Results MDL RL Results MDL RL (ppbV) (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) CAS# Analyte 156-59-2

0.0793 cis-1,2-Dichloroethene 0.024 0 020 J .0061 0.04 0.16 127-18-4 Tetrachlorocthene 1.3 3 0.036 0.27 0.195 0053 0.04 0.04 156-60-5 trans-1,2-Dichloroethene 22 0.019 0.16 5.6 0.0049 0113 0.021 0.020 3 0 0039 79-01-6 Trichloroethene 0.21 0.04 0.10 ND 0 0088 0.040 75-01-4 Vinyl Chloride ND 0.022



--; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J, Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T: Tentatively Identified Compound (TIC)



Date: 01-Aug-16

Date Received: 7/29/2016

Analysis Date: 7/30/2016

Analyst: DRS

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16071850

Sample Identification GRPCE-15-IA- (MAIN) Date Sampled: 7/29/2016

Lab Number: 006A

Sample Type: Air, Can

Test Method: EPA Method TO-15A

Initial Pressure: -1.90 psig
Final Pressure: -1.90 psig

Canister ID: 14539

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qua
156-59-2	cis-1,2-Dichloroethene	ND 0.024 0.160 ND 0 0061 0.04 0 1
127-18-4	Tetrachloroethene	1.8 J 0.036 0.27 (0.27 J) 0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	18 0.019 0.16 4.4 0 0049 0.04 1
79-01-6	Trichloroethene	0.21 0.021 0.21 0.040 0 0039 0.04 1
75-01-4	Vinyl Chloride	ND 0.022 0.10U ND 0.0088 0.04U 1



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated \boldsymbol{r}

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 01-Aug-16

Date Sampled: 7/29/2016

Date Received: 7/29/2016

Analysis Date: 7/30/2016

Analyst: DRS

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16071850

Sample Identification GRPCE-15-IA-

Lab Number: 004A

Sample Type: Air, Can

Test Method: EPA Method TO-15A

Initial Pressure: -1.77 psig
Final Pressure: -1.77 psig

Canister ID: 14589

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	0.040	0.024	0.16	0.010 3	0.0061	0.04	1	je.
127-18-4	Tetrachloroethene	1.4 3	0.036	0.27	0.21 3	0.0053	0.04	1	
156-60-5	trans-1,2-Dichlorocthene	21	0.019	0.16	5.2	0.0049	0.04	1	
79-01-6	Trichloroethene	0.054	0.021	0.21	0.010	0.0039	0.04	1	30
75-01-4	Vinyl Chloride	ND	0.022	0.10	U) NE	0.0088	0.041	1	



General Notes and Qualifiers:

--; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated \boldsymbol{r}

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Date: 01-Aug-16

Date Received: 7/29/2016

Client: **TETRA TECH**

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16071850

Sample Identification GRPCE-15-IA-

005A

Date Sampled: 7/29/2016

Sample Type: Air, Can

Lab Number:

Analysis Date: 7/30/2016 Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -1.93 psig Final Pressure: -1.93 psig Canister ID: 14540

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF	Qual
156-59-2	cis-1,2-Dichloroethene	0.040 7 0 024 0.16 (0.010 7).0061 0.04 1	pe
127-18-4	Tetrachloroethene	1.2 5 0 036 0.27 0.18 5 0 0053 0.04 1	
156-60-5	trans-1,2-Dichloroethcne	18 0 019 0.16 4.6 0.0049 0.04 1	
79-01-6	Trichloroethene	0.054 7 0 021 0.21 0.010 0.0039 0.04 1	-
75-01-4	Vinyl Chloride	NHD 0 022 (0.10) NHD 0 0088 (0.04 U) 1	



RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B, Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 01-Aug-16

Date Sampled: 7/29/2016

Date Received: 7/29/2016

Analysis Date: 7/30/2016

Analyst: DRS

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16071850

Sample Identification GRPCE-15-IA-

Lab Number: 003A

Sample Type: Air, Can

Test Method: EPA Method TO-15A

Initial Pressure: -2.06 psig
Final Pressure: -2.06 psig

Canister ID: 13961

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF	Qual
156-59-2	cis-1,2-Dichloroethene	0.040 J 0.024 0.16 0.010 J 0.061 0.04 1	-
127-18-4	Tetrachloroethene	1.3 3 0.036 0.27 0.19 3 0.0053 0.04 1	
156-60-5	trans-1,2-Dichloroethene	19 0.019 0.16 4.7 0.0049 0.04 1	
79-01-6	Trichloroethene	0.054 3 0 021 0.21 0.010 3 0.0039 0.04 1	-
75-01-4	Vinyl Chloride	ND 0.022 0.10 U ND 0.0088 0.04 U 1	



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E: Value exceeds linear range of calibration curve



-1.59 psig

Date: 01-Aug-16

Client: TETRA TECH

Final Pressure:

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16071850

Sample Identification GRPCE-16-IA- (1) Date Sampled: 7/29/2016

Lab Number: 001A Date Received: 7/29/2016

Sample Type: Air, Can Analysis Date: 7/30/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -1.59 psig

Canister ID: 13947

CAS#	Analyte	 Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	NH	0.024	0.16	ND NO	0 0061	0 04 U) 1	
127-18-4	Tetrachloroethene	1.6	0 036	0.27	0.23 3	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethcne	0.32	0.019	0.16	0.080	0.0049	0.04	1	
79-01-6	Trichloroethene	0.054	0 021	0.21	0.0103	0.0039	0.04	1	+e
75-01-4	Vinyl Chloride	 ND	0 022	0.10	JAP	0 0088	0.040	1	



RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 01-Aug-16

TETRA TECH Client:

GRAND RAPIDS EMERGENCY RESPONSE Project:

Work Order No: 16071850

Sample Identification GRPCE-16-IA-

Date Sampled: 7/29/2016

Lab Number:

002A

Date Received: 7/29/2016

Sample Type:

Air, Can

Analysis Date: 7/30/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-3.18 psig

Final Pressure:

-3.18 psig

Canister ID:

14133

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	0 040	0 024	0.16	0.0103	0061	0.04	1	Je.
127-18-4	Tetrachloroethene	1.4 🖸	0 036	0.27	0.20 3	0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	0 28	0 019	0.16	0.070	0.0049	0.04	1	
79-01-6	Trichlorocthene	0 054	0 021	0.21	0.0103	0 0039	0.04	1	30
75-01-4	Vinyl Chloride	ND	0 022	0.10	U) NB	0 0088	(0.04 U)1	



RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 01-Aug-16

Date Sampled: 7/29/2016

Date Received: 7/29/2016

Analysis Date: 7/30/2016

Analyst: DRS

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16071850

Sample Identification GRPCE-19-OA-

008A Lab Number:

Sample Type: Air, Can

EPA Method TO-15A Test Method:

Initial Pressure: -2.36 psig Final Pressure: -2.36 psig

Canister ID:	14074	
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m²) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0 024 (0 16 U) ND 0 0061 (0.04 U) 1
127-18-4	Tetrachloroethene	0.20 3 0 036 0.27 0.030 3 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	ND 0.019 (0.16 b) ND 0.0049 (0.04 b) 1
79-01-6	Trichloroethene	0 054 3 0 021 0.21 0.010 3 0.0039 0.04 1
75-01-4	Vinyl Chloride	ND- 0 022 0.10 D) ND- 0 0088 0.04 D) 1



RL, Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



August 15, 2016

Betsy Nightingale On-Scene Coordinator U.S. Environmental Protection Agency Region 5 9311 Groh Road Grosse Ile, MI 48138-1697

Subject: Data Validation Report

Grand Rapids VI ER

EPA Contract No. EP-S5-13-01

Technical Direction Document No. S05-0001-1605-010

Document Tracking No. 1017

Dear Ms. Nightingale:

Tetra Tech Inc. (Tetra Tech) is submitting this Data Validation Report for two air samples collected at the Grand Rapids VI ER site. The samples were collected on July 29, 2016 and were analyzed for volatile organic compounds by Eurofins-Air Toxics. Tetra Tech received the data on August 8, 2016.

Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines* (NFG) for Superfund Organic Methods Data Review (August 2014).

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

If you have any questions regarding this Data Validation Report, please call me at (662) 681-5727.

Sincerely,

Jessica A. Vickers START Chemist

Enclosure

cc: Kevin Scott, Tetra Tech Program Manager

Michael Browning, Tetra Tech Project Manager

TDD File

Jesaca a Vickers

ATTACHMENT 1

DATA VALIDATION REPORT EUROFINS-AIR TOXICS SDG 1608048

Site Name	Grand Rapids VI ER	TDD No.	S05-0001-1605-010
Document Tracking No.	1017		303-0001-1603-010
Data Reviewer (signature and date)	Jeoaca a. Vickers August 11, 2016	Technical Reviewer (signature and date)	Hang N. Elis III 15 August 2016
Laboratory Report No.	1608048	Laboratory	Eurofins-Air Toxics/Folsom, CA
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15	
Samples and Matrix	Two air samples		
Field Duplicate Pairs	None		
Field Blanks	None		

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Within	
Criteria	Exceedance/Notes
Υ	
nitial Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/Notes
Υ	
ontinuing Calibration:	
Within	Exceedance/Notes
Criteria	
Υ	
alibration Verification:	
Within	Exceedance/Notes
Criteria	Litteedance/Notes
Υ	
lethod blanks:	
Within	Even dence /Netes
Criteria	Exceedance/Notes
Υ	

Exceedance/Notes



Field blanks:
Within

Criteria NA

Interference	Check Sam	ples (ICS)	(ICP	metals only	/):
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Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within	Exceedance/Notes
Criteria	Exceedance/ Notes
NA	



Field dup	licates
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Within Criteria	Exceedance/Notes
NA	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Υ	

Sample dilutions:

Within Criteria		Exceedance/Notes
Υ	1.71x: GRPCE-01-SS-	2.13x: GRPCE-01-SS-

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
Υ	



Target analyte identification	Target	analy	vte i	iden	tifica	ition
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Within Criteria	Exceedance/Notes
Υ	
nalyte qua	ntitation and MDLs/RLs:
Within	
Criteria	Exceedance/Notes

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

Other [spe	enyl.
Within	Evenedance/Notes
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.



ANALYTICAL RESULTS SUMMARY EUROFINS-AIR TOXICS REPORT NO. 1608048

CLIENTSAMPID	COMPOUND NAME	REPLMT	RESULTS	DATAFLAGS	UNITS	VALRESULTS	VALFLAGS
GRPCE-01-SS-	Vinyl Chloride	0.17		ND	PPBV	0.17	U
GRPCE-01-SS-	trans-1,2-Dichloroethene	0.17		ND	PPBV	0.17	U
GRPCE-01-SS-	cis-1,2-Dichloroethene	0.17		ND	PPBV	0.17	U
GRPCE-01-SS-	Trichloroethene	0.17		ND	PPBV	0.17	U
GRPCE-01-SS-	Tetrachloroethene	0.17	9.9		PPBV	9.9	
GRPCE-01-SS-	Vinyl Chloride	0.44		ND	UG/M3	0.44	U
GRPCE-01-SS-	trans-1,2-Dichloroethene	0.68		ND	UG/M3	0.68	U
GRPCE-01-SS-	cis-1,2-Dichloroethene	0.68		ND	UG/M3	0.68	U
GRPCE-01-SS-	Trichloroethene	0.92		ND	UG/M3	0.92	U
GRPCE-01-SS-	Tetrachloroethene	1.2	67		UG/M3	67	
GRPCE-01-SS-	Vinyl Chloride	0.21		ND	PPBV	0.21	U
GRPCE-01-SS-	trans-1,2-Dichloroethene	0.21		ND	PPBV	0.21	U
GRPCE-01-SS-	cis-1,2-Dichloroethene	0.21		ND	PPBV	0.21	U
GRPCE-01-SS-	Trichloroethene	0.21		ND	PPBV	0.21	U
GRPCE-01-SS-	Tetrachloroethene	0.21	2.2		PPBV	2.2	
GRPCE-01-SS-	Vinyl Chloride	0.54		ND	UG/M3	0.54	U
GRPCE-01-SS-	trans-1,2-Dichloroethene	0.84		ND	UG/M3	0.84	U
GRPCE-01-SS-	cis-1,2-Dichloroethene	0.84		ND	UG/M3	0.84	U
GRPCE-01-SS-	Trichloroethene	1.1		ND	UG/M3	1.1	U
GRPCE-01-SS-	Tetrachloroethene	1.4	15		UG/M3	15	



August 15, 2016

Betsy Nightingale On-Scene Coordinator U.S. Environmental Protection Agency Region 5 9311 Groh Road Grosse Ile, MI 48138-1697

Subject: Data Validation Reports

Grand Rapids VI ER

EPA Contract No. EP-S5-13-01

Technical Direction Document No. S05-0001-1605-010

Document Tracking No. 1019

Dear Ms. Nightingale:

Tetra Tech Inc. (Tetra Tech) is submitting these Data Validation Reports for 32 air samples (including four field duplicates) collected at the Grand Rapids VI ER site. The samples were collected on August 2, 5, 6, and 9, 2016 and were analyzed for volatile organic compounds by Bureau Veritas Laboratories. Tetra Tech received the final data on August 12, 2016.

Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines* (NFG) for Superfund Organic Methods Data Review (August 2014).

No rejection of results was required for this data set. The data is usable as qualified based on the findings of this validation.

If you have any questions regarding these Data Validation Reports, please call me at (662) 681-5727.

Sincerely,

Jessica A. Vickers START Chemist

Enclosure

cc: Kevin Scott, Tetra Tech Program Manager

Michael Browning, Tetra Tech Project Manager

TDD File

Jesaca a Vickers

ATTACHMENT 1

DATA VALIDATION REPORTS SDGS 16080126, 16080429, 16080458, AND 16080573

Site Name	Grand Rapids VI ER	TDD No.	SOF 0001 160F 010	
Document Tracking No.	1019A	1221121	S05-0001-1605-010	
Data Reviewer (signature and date)	Jeoaca a Vickers August 15, 2016	Technical Reviewer (signature and date)	Hang N. Elis III 15 August 2016	
Laboratory Report No.	16080126	80126 Laboratory		
Analyses Volatile organic compounds (VOCs) by EPA Method TO-15				
Samples and Matrix	Eight air samples (including a field duplicate)			
Field Duplicate Pairs	GRPCE-17-IA- 2)/GRPCE-17-IA- 2)-DP			
Field Blanks	None			

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection of results was required for this data set. The data is usable as qualified based on the findings of this validation effort.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrument Performance Checks:

Within Criteria	Exceedance/Notes
Υ	

Initial Calibration:

Within Criteria	Exceedance/Notes
Y	

Continuing Calibration:

Within Criteria	Exceedance/Notes
N	The percent difference exceeded the acceptance limit for tetrachloroethene; therefore, the associated results were qualified as estimated (J).

Calibration Verification:

Within Criteria	Exceedance/Notes
NA	

Method blanks:

Within Criteria	Exceedance/Notes
Υ	

Field blanks:

Within Criteria	Exceedance/Notes
NA	



Interference	Check Sam	ples (ICS)	(ICP	metals only	/):
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Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within	Even dones /Notes
Criteria	Exceedance/Notes
NA	



	EFA REGION 5 START CONTRACT	
Field duplicates:		
Within	Exceedance/Notes	
Criteria	Execedance/Notes	
Υ		
LCSs/LCSDs:		
Within	E In /No	
Criteria	Exceedance/Notes	
Υ		
Sample dilutions:		
Within		
Criteria	Exceedance/Notes	
NA		
Re-extraction and reanalysis:		
Within Criteria	Exceedance/Notes	
NA		
Second column confirmation (GC ar	d HPLC analyses only):	
Within	Fuere device (Nietos	
Criteria	Exceedance/Notes	
NA		
Internal Standards:		
Within	E (Natural	
Criteria	Exceedance/Notes	



Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	The laboratory qualified results between the reporting limit and method detection limit as estimated (J).

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

Other laber	~/\dagger \text{\tint{\text{\text{\text{\text{\text{\text{\text{\text{\tint{\text{\tint{\text{\text{\text{\tint{\text{\text{\text{\text{\tint{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\tint{\text{\tint{\text{\tint{\text{\text{\text{\text{\text{\tinit}\\ \text{\texi}\tint{\text{\text{\text{\text{\text{\text{\text{\text{\text{\texi}\tint{\text{\text{\text{\texi}\tint{\text{\text{\texict{\texi}\tinz{\texicl{\texit{\texit{\texi}\tint{\texi\tint{\tinter{\texi{\texi{\texi\tint{\texi{\texi{\texi{\texi{\texi{\texi}\texit{\texi{\ti
Within	Evenedance/Notes
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.		





Canister ID:

Date: 03-Aug-16

Client:	TETRA TECH		
Project:	GRAND RAPIDS EMERGENCY RESPONSE	Work Order No:	16080126
Sample Identificat	tion GRPCE-16-IA-BASEMENT)	Date Sampled:	8/2/2016
Lab Number:	007A	Date Received:	8/2/2016
Sample Type:	Air, Can	Analysis Date:	8/2/2016
Test Method:	EPA Method TO-15A	Analyst:	DRS
Initial Pressure:	-1.91 psig		
Final Pressure:	-1.91 psig		

CAS#		Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene		ND	0.024	0.16	W HID	0 0061	0 04 0) 1	
127-18-4	Tetrachloroethene		1.5 3	0.036	0.27	0.22 3	.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene		18	0.019	0.16	4.6	0.0049	0.04	1	
79-01-6	Trichlorocthene		0.11 3	0.021	0.21	0.020	.0039	0.04	_ 1	40
75-01-4	Vinyl Chloride		NO.	0.022	0.10) NE	0 0088	(0.040	1)1	



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



trans-1,2-Dichloroethene

Trichloroethene

Vinyl Chloride

Date: 03-Aug-16

Client:	TETRA TECH	
Project:	GRAND RAPIDS EMERGENCY RESPONSE	Work Order No: 16080126
Sample Identifica	tion GRPCE-16-IA MAIN)	Date Sampled: 8/2/2016
Lab Number:	006A	Date Received: 8/2/2016
Sample Type:	Air, Can	Analysis Date: 8/2/2016
Test Method:	EPA Method TO-15A	Analyst: DRS
Initial Pressure:	-2.09 psig	
Final Pressure:	-2.09 psig	
Canister ID:	14122	
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
	1,2-Dichloroethene	0.024 0 16 U NO 0 0061 0.04 U 1 0.036 0.27 0.28 0.0053 0.04 1



0.0049

0.0039

ND 0 0088

0.04

0.04

0.04 L

156-60-5

79-01-6

75-01-4

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

0.019

0.021

0.022

0.16

0.100

3.7

0.040

T; Tentatively Identified Compound (TIC)

^{--;} Information not available or not applicable.



Date: 03-Aug-16

Date Sampled: 8/2/2016

Date Received: 8/2/2016

Analysis Date: 8/2/2016

Analyst: DRS

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16080126

Sample Identification GRPCE-16-IA-1168(BASEMENT)

Cation GIG CE-10-1A-1108(DASEMENT

Lab Number:

005A Air, Can

Sample Type:

EPA Method TO-15A

Initial Pressure:

-2.73 psig

Final Pressure:

Test Method:

-2.73 psig

Canister ID:

14626

Canister 1D	14020	Results MDL RL Results MDL RL
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m²) (ug/m²) (ug/m²) (ppbV) (ppbV) (ppbV) DF Qua
156-59-2	cis-1,2-Dichloroethene	ND 0.024 (016 U) ND 0 0061 (0.04 U) 1
127-18-4	Tetrachloroethene	1.5 3 0.036 0 27 0.22 3 0 0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	16 0.019 0.16 4.1 0.0049 0.04 1
79-01-6	Trichloroethene	0.054 3 0.021 0.21 0.010 0 0039 0.04 1
75-01-4	Vinyl Chloride	ND 0.022 (0.10) ND 0.0088 (0.04 2) 1



RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 03-Aug-16

Date Sampled: 8/2/2016

Date Received: 8/2/2016

Analysis Date: 8/2/2016

Analyst: DRS

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16080126

Sample Identification GRPCE-16-IA-

Lab Number:

004A

Sample Type:

Air, Can

Test Method:

EPA Method TO-15A

Initial Pressure:

-2.19 psig

Final Pressure:

-2.19 psig

Canister ID:

14028

Analyte	Results MDL RL Results MDL RL (ug/m²) (ug/m²) (ug/m²) (ppbV) (ppbV) (ppbV) DF Qual
is-1,2-Dichloroethene	NO 0.024 (0.16 U ND 0 0061 (0.04 U) 1
etrachloroethene	1.6 J 0.036 0.27 0.24 J 0.0053 0.04 1
rans-1,2-Dichloroethene	15 0.019 0.16 3.8 0.0049 0.04 1
richloroethene	0.11 3 0.021 0.21 0.020 3 0039 0.04 1
/inyl Chloride	NO 0.022 0.100 NO 0.088 0.040 1
1	s-1,2-Dichloroethene etrachloroethene ans-1,2-Dichloroethene richloroethene



-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J: Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R: RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Date: 03-Aug-16

Date Sampled: 8/2/2016

Date Received: 8/2/2016

Analysis Date: 8/2/2016

Analyst: DRS

Client: TETRA TECH

GRAND RAPIDS EMERGENCY RESPONSE Project: Work Order No: 16080126

Sample Identification GRPCE-17-IA

Lab Number: 001A

Air, Can Sample Type:

Test Method: EPA Method TO-15A

Initial Pressure: -2.07 psig Final Pressure: -2.07 psig

Canister ID: 14148

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m²) (ug/m²) (ug/m²) (ppbV) (ppbV) DF	Qual
156-59-2	cis-1,2-Dichloroethene	0.12 5 0 024 0.16 0.030 5 0.0061 0.04 1	40
127-18-4	Tetrachloroethene	2.1 3 0.036 0.27 0.31 3 0.0053 0.04 1	
156-60-5	trans-1,2-Dichloroethene	0.40 0.019 0.16 0.10 0.0049 0.04 1	
79-01-6	Trichloroethene	0.21 0.021 0.21 0.040 0.0039 0.04 1	
75-01-4	Vinyl Chloride	0.022 0.100 NO 0.088 0.040 1	



-, Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R, RPD outside accepted recovery limits

T; Tentatively Identified Compound (T1C)



Date: 03-Aug-16

Date Sampled: 8/2/2016

Date Received: 8/2/2016

Analysis Date: 8/2/2016

Analyst: DRS

Client: **TETRA TECH**

GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16080126 Project:

Sample Identification GRPCE-17-IA

Lab Number:

002A Air, Can

Sample Type: Test Method:

EPA Method TO-15A

Initial Pressure:

-2.29 psig

Final Pressure:

-2.29 psig

Canister ID:

14580

		Results MDL RL Results MDL RL
CAS#	Analyte	(ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	0.024 (0.16 U) NO 0 0061 (0.04 U) 1
127-18-4	Tetrachloroethene	1.4 J 0 036 0.27 0.21 J 00053 0.04 1
156-60-5	trans-1,2-Dichloroethene	0.16 0.019 0.16 0.040 0.049 0.04 1
79-01-6	Trichloroethene	0.054 3 0 021 0.21 0.010 3 0.0039 0.04 1
75-01-4	Vinyl Chloride	0.022 (010U) ND 0 0088 (004U)



--; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Date: 03-Aug-16

Client: TETRA TECH

GRAND RAPIDS EMERGENCY RESPONSE Project: Work Order No: 16080126

Sample Identification GRPCE-17-IA-Date Sampled: 8/2/2016

Lab Number:

003A Date Received: 8/2/2016

Sample Type: Air, Can

Analysis Date: 8/2/2016 EPA Method TO-15A Test Method: Analyst: DRS

Initial Pressure: -2.10 psig Final Pressure: -2.10 psig

Canister ID: 14025

CAS#	Analyt	e	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	- I Constitution of the Co	5 ND	0.024	0.16	U) NE	0 0061	(0.04 U)1	
127-18-4	Tetrachloroethene		1.4	0 036	0.27	0.20	.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene		0.20	0.019	0.16	0.050	0.0049	0.04	1	
79-01-6	Trichloroethene		0 054	J 0 021	0.21	0.010 3	0.0039	0.04	1	,0
75-01-4	Vinyl Chloride		NE	0 022	0.10	U) NE	0 0088	0.041	1)1	



-: Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Date: 03-Aug-16

Date Sampled: 8/2/2016

Date Received: 8/2/2016

Analysis Date: 8/2/2016 Analyst: DRS

Client: TETRA TECH

GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16080126 Project:

Sample Identification GRPCE-20-OA-

Lab Number:

008A

Sample Type:

Air, Can

Test Method:

EPA Method TO-15A

Initial Pressure:

-2.25 psig -2.25 psig

Final Pressure: Canister 1D:

CAS# 156-59-2

127-18-4

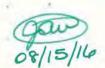
156-60-5

79-01-6

75-01-4

14177

14177		
Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF	Qual
cis-1,2-Dichloroethene	ND 0.024 (0.16U) ND-0.0061 (0.04U) 1	
Tetrachloroethene	0.54 J 0 036 0.27 0.080 J 0.0053 0.04 1	
trans-1,2-Dichloroethene	0.040 0.019 0.16 0.010 0.0049 0.04 1	4ª
Trichloroethene	0.054 0.021 0.21 0.010 0.0039 0.04 1	· re
Vinyl Chloride	ND 0.022 0.10 U ND 0.0088 0.04 U 1	



ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J: Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve

Site Name	Grand Rapids VI ER	TDD No.	SOF 0001 160F 010
Document Tracking No.	1019B	122 1121	S05-0001-1605-010
Data Reviewer (signature and date)	Jeoaca a. Wickers August 15, 2016	Technical Reviewer (signature and date)	Hang N. Elis III 15 August 2016
Laboratory Report No.	16080429	Laboratory	Bureau Veritas/Novi, MI
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15	
Samples and Matrix	Eight air samples (including a field duplicate	e)	
Field Duplicate Pairs	GRPCE-17-IA- GRPCE-17-	IA-DP	
Field Blanks	None		

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Y	
Initial Calibration:	
Within	Exceedance/Notes
Criteria	Executive y Notes
Υ	
Continuing Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Υ	
Calibration Verification:	
Within	Exceedance/Notes
Criteria	Exact durine, Notes
NA	
Method blanks:	
Within	Exceedance/Notes
Criteria	Endecadinely Notes
Υ	

Exceedance/Notes



Within

Criteria NA

Interference	Check Sam	ples (ICS)	(ICP	metals only	/):
--------------	-----------	------------	------	-------------	-----

Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within	FXCEPGANCE/NOTES
Criteria	
NA	



	EFA REGION 5 START CONTRACT
Field duplicates:	
Within	Exceedance/Notes
Criteria	Exceedance, Notes
Υ	
LCSs/LCSDs:	
Within	E da /Alaba
Criteria	Exceedance/Notes
Υ	
Sample dilutions:	
Within	Funna dan sa /Natao
Criteria	Exceedance/Notes
NA	
Re-extraction and reanalysis:	
Within Criteria	Exceedance/Notes
NA	
Second column confirmation (GC and	l HPLC analyses only):
Within	
Criteria	Exceedance/Notes
NA	
Internal Standards:	
Within	Funca damas /Nichos
Criteria	Exceedance/Notes



Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes The laboratory qualified results between the reporting limit and method detection limit as estimated (1)
Υ	The laboratory qualified results between the reporting limit and method detection limit as estimated (J).

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

Other laber	~/\dagger \text{\tiny{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\tiny{\tiny{\text{\text{\text{\tiny{\tin}\tiny{\tiny{\tiny{\tiny{\tiny{\tiny{\tiny{\tiny{\tiny{\ti
Within	Evenedance/Notes
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.





Date: 08-Aug-16

Client: Project:	TETRA TECH GRAND RAPIDS EMER	GENCY RESPONSE			,	Work Ord	ier No:	16080429	9	
Sample Identifica	tio GRPCE-17-1A	BASEMENT)				Date Sa	mpled:	8/5/2016		
Lab Number:	007A					Date Re	ceived:	8/5/2016		
Sample Type:	Air, Can					Analysi	s Date:	8/5/2016		
Test Method:	EPA Method TO-15A					A	nalyst:	DRS		
Initial Pressure:	-1.39 psig									
Final Pressure:	-1.39 psig									
Canister ID:	14120									
CAS#	Analyt	e	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2 cis	-1,2-Dichloroethene		ND	0.024	(0.16	U NE	0 0061	(0.04U)1	
127-18-4 Te	trachloroethene		1.2	0.036	0.27	0.18	0 0053	0.04	1	
156-60-5 tra	ns-1,2-Dichloroethene		20	0.019	0.16	5.1	0.0049	0.04	1	
79-01-6 Tri	chloroethene		0.054	0.021	0.21	0.010	0.0039	-	1	3.0
75-01-4 Vii	nyl Chloride		ND	0.022	0.10	U) HE	0 0088	0.04)1	



ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T, Tentatively Identified Compound (TIC)

^{-;} Information not available or not applicable.



Date: 08-Aug-16

Client:	TETRA TECH	
Project:	GRAND RAPIDS EMERGENCY RESPONSE	Work Order No: 16080429
Sample Identifica	atio GRPCE-17-1A MAIN)	Date Sampled: 8/5/2016
Lab Number:	006A	Date Received: 8/5/2016
Sample Type:	Air, Can	Analysis Date: 8/5/2016
Test Method:	EPA Method TO-15A	Analyst: DRS
Initial Pressure:	-2.32 psig	
Final Pressure:	-2.32 psig	
Canister ID:	14026	
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2 cis	s-1,2-Dichloroethene	ND 0.024 (0.160) ND 0.0061 (0.04 U)1
127-18-4 Te	etrachloroethene	1,2 0.036 0.27 0.18 0.0053 0.04 1
156-60-5 tra	ans-1,2-Dichloroethene	11 0.019 0.16 2.8 0.0049 0.04 1
79-01-6 Tr	richloroethene	0.16 3 0.021 0.21 0.030 3 0.0039 0.04 1
75-01-4 Vi	inyl Chloride	ND 0.022 0.100 ND 0 0088 0.04 U 1



General Notes and Qualifiers:

-; Information not available or not applicable.

ND, Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

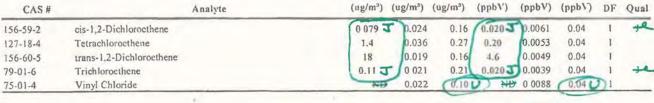
R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Date: 08-Aug-16

	TETRA TECH GRAND RAPIDS EMERGENCY RESPONSE			,	Work Ord	ler No:	16080429
Sample Identification	GRPCE-17-IA-				Date Sa	mpled:	8/5/2016
Lab Number:	004.4				Date Re	ceived:	8/5/2016
Sample Type:	Air, Can				Analysi	s Date:	8/5/2016
Test Method:	EPA Method TO-15A				A	nalyst:	DRS
Initial Pressure:	-2.27 psig						
Final Pressure:	-2.27 psig						
Canister ID:	13999						
		Results	MDL	RL	Results	MDL	RL ()





-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J: Value is between the MDL and Reporting Limit, estimated

MDL; Method Detection Limit

B, Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Trichloroethene Vinyl Chloride Date: 08-Aug-16

Client: Project:	TETRA TECH GRAND RAPIDS EMERGENCY RESPONSE				Work Ore	der No:	1608042	9	
Sample Identification	GRPCE-17-IA- (BASEMENT)-DP				Date Sa	mpled:	8/5/2016		
Lab Number:	005A				Date Re	ceived:	8/5/2016		
Sample Type:	Air, Can				Analysi	is Date:	8/5/2016	,	
Test Method:	EPA Method TO-15A				A	nalyst:	DRS		
Initial Pressure:	-1.42 psig								
Final Pressure:	-1.42 psig								
Canister ID:	14315								
CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
127-18-4 Tetra	2-Dichloroethene chloroethene -1,2-Dichloroethene	1.3	0.024 0.036 0.019	0.27	0.19	0.0061 0.0053 0.0049	0.04		

0.054 3 0 021



0.010 3 0.0039

ND 0.0088

0.04

0.04 U

0.21

79-01-6

75-01-4

-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated

MDL; Method Detection Limit

B, Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Date: 08-Aug-16

Client:	TETRA TECH	EMERCENCY RESPONSE				Verl Ore	lan Mar	1600043	0	
Project:	GRAND RAPIDS EMERGENCY RESPONSE					work Ord	ter No:	16080429		
Sample Identificatio GRPCE-17-IA-		(MAIN)				Date Sa	mpled:	8/5/2016	5	
Lab Number: 003A			Date Received				ceived:	8/5/2016		
Sample Type: Air, Can			Analysis Date				s Date:	8/5/2016		
Test Method: EPA Method T		D-15A				A	nalyst:	DRS		
Initial Pressure:	-2.14 psig									
Final Pressure:	-2.14 psig									
Canister ID:	14478									
CAS#		Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2 cis	-1,2-Dichloroethene	10	111	0.024	0.16	U) NE	0 0061	(0 04 U	DI	
127-18-4 Te	trachloroethene		1.4	0.036	0.27	0.20	0.0053	0.04	1	
156-60-5 tra	ns-1,2-Dichloroethenc		22	0.019	0.16	5.5	0.0049	0.04	- 1	
79-01-6 Tr	ichloroethene		0.054	0.021	0.21	0.0103	0.0039	0.04	1	Je
75-01-4 Vi	nyl Chloride		NE	0.022	0.10	DIA CO	0 0088	0.041	751	



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 08-Aug-16

Client:	TETRA TECH								
Project:	GRAND RAPIDS EMERGENCY RESPONSE			1	Work Or	der No:	1608042	9	
Sample Identificat	io GRPCE-18-IA 1)				Date Sa	mpled:	8/5/2016		
Lab Number:	001A				Date Re	ceived:	8/5/2016	į.	
Sample Type:	Air, Can				Analysi	s Date:	8/5/2016		
Test Method:	EPA Method TO-15A				A	nalyst:	DRS		
Initial Pressure:	-2.78 psig								
Final Pressure:	-2.78 psig								
Canister ID:	13940								
CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2 cis-1	,2-Dichloroethene	0.12	J 0 024	0.16	0.030	0.0061	0.04	1	40
127-18-4 Tetr	achloroethene	0.81	0.036	0.27	0.12	0.0053	0.04	1	
156-60-5 trans	s-1,2-Dichloroethene	0.28	0.019	0.16	0.070	0.0049	0.04	1	
79-01-6 Tric	hloroethene	0.21	0.021	0.21	0.040	0.0039	0.04	1	
75-01-4 Vin	vl Chloride	NE	0.022	0.10	MI MI	- 0 0088	0.041	1	



General Notes and Qualifiers:

-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Date: 08-Aug-16

Client: Project:	TETRA TECH GRAND RAPIDS EMERGENCY RESPONSE			,	Work Ord	der No:	1608042	9	
Sample Identifica	tio GRPCE-18-IA (2)				Date Sa	mpled:	8/5/2016		
Lab Number:	002A				Date Re	ceived:	8/5/2016		
Sample Type:	Air, Can				Analysi	is Date:	8/5/2016	,	
Test Method:	EPA Method TO-15A				A	nalyst:	DRS		
Initial Pressure:	-2.45 psig								
Final Pressure:	-2.45 psig								
Canister ID:	14291								
CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2 cis	-1,2-Dichloroethene	ND	0.024	0.16	U) HE	0 0061	0.04 L	DI	
127-18-4 Te	trachloroethene	0.95	0.036	0.27	0.14	0.0053	0.04	1	
156-60-5 tra	ns-1,2-Dichloroethene	0.16	0.019	0.16	0.040	0.0049	0.04	1	
79-01-6 Tri	chloroethene	0.054	0 021	0.21	0.0103	0.0039	0.04	1	4
75-01-4 Vi	nyl Chloride	ND	0.022	0.10	U NH	0.0088	0.04 L	1)	



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL: Report Limit

J; Value is between the MDL and Reporting Limit, estimated

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

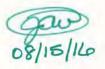
T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 08-Aug-16

Client: Project:	TETRA TECH GRAND RAPIDS EMERGENCY RESPONSE	Work Order No: 16080429
Sample Identific	atio GRPCE-21-OA	Date Sampled: 8/5/2016
Lab Number:	008A	Date Received: 8/5/2016
Sample Type:	Air, Can	Analysis Date: 8/6/2016
Test Method:	EPA Method TO-15A	Analyst: DRS
Initial Pressure:	-2.47 psig	- 1
Final Pressure:	-2.47 psig	
Canister ID:	14078	
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2 cis	s-1,2-Dichloroethene	ND 0.024 (0.16 U) ND 0.0061 (0.04 U) 1
127-18-4 Te	etrachloroethene	0.54 0.036 0.27 0.080 0.0053 0.04 1
156-60-5 tra	ans-1,2-Dichlorocthene	0.040 3 0.019 0.16 0.010 3 0.0049 0.04 1
79-01-6 Tr	richloroethene	0.054 3 0 021 0.21 0.010 3 0.0039 0.04 1
75-01-4 V	inyl Chloride	ND 0.022 (0.10) ND 0 0088 (0.04 U)



-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

Site Name	Grand Rapids VI ER	TDD No.	S05-0001-1605-010
Document Tracking No.	1019C	1	202-0001-1002-010
Data Reviewer (signature and date)	Jeoaca a. Vickers August 15, 2016	Technical Reviewer (signature and date)	Hang N. Elis III 15 August 2016
Laboratory Report No.	16080458	Laboratory	Bureau Veritas/Novi, MI
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15	
Samples and Matrix	Eight air samples (including a field duplicate	e)	
Field Duplicate Pairs	GRPCE-17-IA-	DP	
Field Blanks	None		

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Y	
Initial Calibration:	
Within	Exceedance/Notes
Criteria	Executive y Notes
Υ	
Continuing Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Υ	
Calibration Verification:	
Within	Exceedance/Notes
Criteria	Exact durine, Notes
NA	
Method blanks:	
Within	Exceedance/Notes
Criteria	Endecadinely Notes
Υ	

Exceedance/Notes



Within

Criteria NA

Interference	Check Sam	ples (ICS)	(ICP	metals only	/):
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Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within	Exceedance/Notes
Criteria	Exceedance/ Notes
NA	



Fiel	d	dup	licat	es

Within Criteria	Exceedance/Notes
Υ	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Υ	

Sample dilutions:

Within Criteria	Exceedance/Notes
Υ	1.48x: GRPCE-19-IA-

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
Υ	



Target analyte identification	Target	analy	vte i	iden	tifica	ition
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Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	The laboratory qualified results between the reporting limit and method detection limit as estimated (J).

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

other labe	···· / J.
Within	Even adams / Notes
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.





Date: 09-Aug-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16080458

Sample Identification GRPCE-18-IA-BASEMENT)

Date Sampled: 8/6/2016

Date Sampled. 6/6/20

Lab Number: 007A Date Received: 8/8/2016
Sample Type: Air, Can Analysis Date: 8/8/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -2.42 psig
Final Pressure: -2.42 psig
Canister ID: 14068

CAS#		Analyte	+	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene			ND GW	0.024	0.16	ND ND	0 0061	(0.04 U)1	
127-18-4	Tetrachloroethene			1.2	0.036	0.27	0.33	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene			64	0.019	0.16	16	0.0049	0.04	1	
79-01-6	Trichloroethene			0.16 3	0.021	0.21	0.030 3	0.0039	0.04	1	10
75-01-4	Vinyl Chloride			GI4-	0.022	0.10	U) AND	-0 0088	(0 04U)1	



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 09-Aug-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16080458

Sample Identification GRPCE-18-IA-

MAIN)

Date Sampled: 8/6/2016

Lab Number:

006A

Sample Type:

Date Received: 8/8/2016

Test Method:

Air, Can

Analysis Date: 8/8/2016

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-2.54 psig

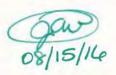
Final Pressure:

-2.54 psig

Canister ID:

14159

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethenc	ND	0.024	0.16	NE (U	0 0061	0.04)1	
127-18-4	Tetrachloroethene	1.5	0.036	0.27	0.22	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	15	0.019	0.16	3.7	0.0049	0.04	1	
79-01-6	Trichloroethene	0.21	0.021	0.21	0.040	0.0039	0.04	1	
75-01-4	Vinyl Chloride	ND	0.022	010	U) NE	0 0088	1.04 U	1	



^{--;} Information not available or not applicable.

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Client: **TETRA TECH**

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16080458

Sample Identification GRPCE-18-IA-

Lab Number:

005A

Sample Type:

Air, Can

Test Method:

EPA Method TO-15A

Initial Pressure:

-4.5 psig

Final Pressure:

-4.5 psig

Canister ID:

14612

CAS#	Analyte		MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	0.0795	0.024	0.16	0.0205	0.0061	0.04	1	4-
127-18-4	Tetrachloroethene	3.3	0.036	0.27	0.48	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	58	0.019	0.16	15	0.0049	0.04	1	
79-01-6	Trichloroethene	0.11.	0.021	0.21	0.020 J	0.0039	0.04	1	*
75-01-4	Vinyl Chloride	ND	0.022	0.10	U) NB	0 0088	0.040)1	



Date: 09-Aug-16

Date Sampled: 8/6/2016

Date Received: 8/8/2016

Analysis Date: 8/8/2016

Analyst: DRS

^{-,} Information not available or not applicable.

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



TETRA TECH

GRAND RAPIDS EMERGENCY RESPONSE Project: Work Order No: 16080458

Sample Identification GRPCE-18-IA-

003A Lab Number:

Sample Type: Air, Can

Client:

Canister ID:

156-60-5

79-01-6

75-01-4

Test Method: EPA Method TO-15A

Trichloroethcne

Vinyl Chloride

14462

Initial Pressure: -1.72 psig Final Pressure: -1.72 psig

Results MDL RL Results MDL RL (ug/m^3) (ppbV) CAS# (ug/m³) (ug/m³) (ppbV) (ppbV) DF Analyte Qual cis-1,2-Dichloroethene 0.040 3 0 024 0.16 0.010 3 0.0061 156-59-2 0.04 0.036 0.27 0.56 0.0053 0.04 127-18-4 Tetrachlorocthene 3.8 trans-1,2-Dichloroethene 0.019 0.16 20 0.0049 0.04 80

0.11 5

0.021

0.022

0.21

0.101

0.020 3

General Notes and Qualifiers:

--; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S: Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve

Date: 09-Aug-16

Date Sampled: 8/6/2016

Date Received: 8/8/2016

Analysis Date: 8/8/2016

0.0039

0.0088

0.04

0.04 D

Analyst: DRS



Date: 09-Aug-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16080458

Sample Identification GRPCE-18-IA-1 (MAIN)-DP Date Sampled: 8/6/2016

Lab Number: 004A Date Received: 8/8/2016

Sample Type: Air, Can Analysis Date: 8/8/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -2.86 psig
Final Pressure: -2.86 psig

Canister ID: 14574

Results MDL RL Results MDL RL

(ug/m³) CAS# Analyte (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual 0.024 0.010 J 156-59-2 cis-1,2-Dichloroethene 0.040 3 0.16 .0061 0.04 Tetrachloroethene 3.9 0.036 0.27 0.58 .0053 0.04 127-18-4 trans-1,2-Dichloroethene 82 0.019 0.16 21 0.0049 0.04 156-60-5 0.021 0.21 0.020 30.0039 0.11 3 0.04 79-01-6 Trichloroethene 0.022 ND 0 0088 0.100 0.040 75-01-4 Vinyl Chloride



^{-;} Information not available or not applicable.

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S: Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 09-Aug-16

Date Received: 8/8/2016

Analysis Date: 8/8/2016

Analyst: DRS

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16080458

Sample Identification GRPCE-19-IA- 1) Date Sampled: 8/6/2016

Lab Number: 001A

Sample Type: Air, Can

Test Method: EPA Method TO-15A

Initial Pressure: -5.7 psig
Final Pressure: -1.5 psig
Canister ID: 14121

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	0.059 J	0.036	0.23	0.0153	0.009	0.059	1.48	4-
127-18-4	Tetrachloroethene	0.80	0.053	0.40	0.12	0.0078	0.059	1.48	
156-60-5	trans-1,2-Dichloroethene	3.2	0.029	0.23	0.81	0.0073	0.059	1.48	
79-01-6	Trichlorocthene	0 080 3	0 031	0.32	0.0153	0.0058	0.059	1 48	-
75-01-4	Vinyl Chloride	ON	0 033	0.151	J) ND	0.013	0.059	1) 48	



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 09-Aug-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16080458

Sample Identification GRPCE-19-IA- 2) Date Sampled: 8/6/2016

Date Gampieu. 0/0/2010

Lab Number: 002A Date Received: 8/8/2016
Sample Type: Air, Can Analysis Date: 8/8/2016

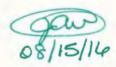
Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -2.2 psig

Final Pressure: -2.2 psig

Canister ID: 14076

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Q	Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 0.16 U ND 0.0061 0.04 U 1	
127-18-4	Tetrachloroethene	1.7 0.036 0.27 0.25 0.0053 0.04 1	
156-60-5	trans-1,2-Dichloroethene	1.9 0.019 0.16 0.48 0.0049 0.04 1	
79-01-6	Trichloroethene	0 054 J 0 021 0.21 0.010 J 0 0039 0.04 1	Je-
75-01-4	Vinyl Chloride	ND 0.022 0.100 ND 0.0088 0.040 1	



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 09-Aug-16

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16080458

Sample Identification GRPCE-22-OA-

Date Sampled: 8/6/2016

Lab Number:

008A

Sample Type:

Air, Can

Date Received: 8/8/2016

Test Method:

EPA Method TO-15A

Analysis Date: 8/8/2016
Analyst: DRS

Initial Pressure:

-2.42 psig

Final Pressure:

-2.42 psig

Canister ID:

14079

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qua
156-59-2	cis-1,2-Dichloroethene	ND 0.024 0.16L ND 0.0061 (0 04 U) 1
127-18-4	Tetrachloroethene	0.20 0.036 0.27 0.030 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	NB 0.019 0.16 NB 0.0049 0.04 U 1
79-01-6	Trichloroethene	NO 0.021 0.21 NO 0.0039 0.04 1
75-01-4	Vinyl Chloride	0.022 0.10 0.0088 0.04 1



^{-;} Information not available or not applicable.

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve

Site Name	Grand Rapids VI ER	TDD No.	S05-0001-1605-010
Document Tracking No.	1019D	1	303-0001-1003-010
Data Reviewer (signature and date)	Jeoaca A. Vickers August 15, 2016	Technical Reviewer (signature and date)	Hang N. Ellis III 15 August 2016
Laboratory Report No.	16080573	Laboratory	Bureau Veritas/Novi, MI
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15	
Samples and Matrix	Eight air samples (including a field duplicat	e)	
Field Duplicate Pairs	GRPCE-19-IA-BASEMENT)/GRPCE	-19-IA-BASEMEN	T)-DP
Field Blanks	None		

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Y	
Initial Calibration:	
Within	Exceedance/Notes
Criteria	Executive y Notes
Υ	
Continuing Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Υ	
Calibration Verification:	
Within	Exceedance/Notes
Criteria	Exact durine, Notes
NA	
Method blanks:	
Within	Exceedance/Notes
Criteria	Endecadinely Notes
Υ	

Exceedance/Notes



Within

Criteria NA

Interference	Check Sam	ples (ICS)	(ICP	metals only	/):
--------------	-----------	------------	------	-------------	-----

Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within	Exceedance/Notes
Criteria	Exceedance/ Notes
NA	



	EFA REGION 5 START CONTRACT
Field duplicates:	
Within	Exceedance/Notes
Criteria	Execedance/Notes
Υ	
LCSs/LCSDs:	
Within	E In /No
Criteria	Exceedance/Notes
Υ	
Sample dilutions:	
Within	
Criteria	Exceedance/Notes
NA	
Re-extraction and reanalysis:	
Within Criteria	Exceedance/Notes
NA	
Second column confirmation (GC ar	d HPLC analyses only):
Within	Fuere device (Nietos
Criteria	Exceedance/Notes
NA	
Internal Standards:	
Within	E (No.
Criteria	Exceedance/Notes



Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes	
Υ	The laboratory qualified results between the reporting limit and method detection limit as estimated (J).	

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

Other laber	811 7 11.
Within	Evenedones/Notes
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.





Sample Identification GRPCE-19-IA

Date: 12-Aug-16

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

BASEMENT)

Work Order No: 16080573

Date Sampled: 8/9/2016

Date Received: 8/9/2016

Analysis Date: 8/9/2016

Analyst: DRS

Lab Number:

006A

~

Air, Can

Sample Type: Test Method:

EPA Method TO-15A

Initial Pressure:

-2.11 psig

Final Pressure:

-2.11 psig

Canister ID:

14125

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qua
156-59-2	cis-1,2-Dichloroethene	ND 0.024 0.16 ND 0 0061 0 04 U 1
127-18-4	Tetrachloroethene	0.88 0.036 0.27 0.13 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	17 0.019 0.16 4.2 0.0049 0.04 1
79-01-6	Trichloroethene	0.054 3 0.021 0.21 0.010 3 0 0039 0.04 1 ±
75-01-4	Vinyl Chloride	ND 0.022 (0100) ND 00088 (0.040) 1



^{--;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

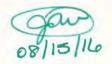
T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 12-Aug-16

Client:	TETRA TECH	
Project:	GRAND RAPIDS EMERGENCY RES	PONSE Work Order No: 16080573
Sample Idea	ntification GRPCE-19-IA BASEME	NT)-DP Date Sampled: 8/9/2016
Lab Numbe	r: 007A	Date Received: 8/9/2016
Sample Typ	e: Air, Can	Analysis Date: 8/9/2016
Test Metho	d: EPA Method TO-15A	Analyst: DRS
Initial Press	sure: -2.41 psig	
Final Press	ure: -2.41 psig	
Canister ID	: 13964	
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 (016U) ND 0 0061 (0.04U)1
127-18-4	Tetrachloroethene	0.88 0.036 0.27 0.13 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	17 0.019 0.16 4.2 0.0049 0.04 1
79-01-6	Trichloroethene	0.054 3 0.021 0.21 0.010 3 0.0039 0.04 1
75-01-4	Vinyl Chloride	ND 0.022 (010U) ND 00088 (004U) 1



--; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16080573

Sample Identification GRPCE-19-IA- (MAIN) Date Sampled: 8/9/2016

Lab Number: 005A

Dab Pulliber. 003A

Sample Type: Air, Can

Test Method: EPA Method TO-15A

Initial Pressure: -2.64 psig
Final Pressure: -2.64 psig

Canister ID: 13986

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) DF Qu
156-59-2	cis-1,2-Dichloroethene	ND 0.024 0.16 NB 0 0061 0.04 D 1
127-18-4	Tetrachloroethene	1.1 0.036 0.27 0.16 0.0053 0.04 1
156-60-5	trans-1,2-Dichlorocthene	9.2 0.019 0.16 2.3 0.0049 0.04 1
79-01-6	Trichloroethene	0.16 3 0.021 0.21 0.030 3 0.0039 0.04 1
75-01-4	Vinyl Chloride	ND 0.022 (0.10) ND 0.0088 (0.04) 1



Date: 12-Aug-16

Date Received: 8/9/2016

Analysis Date: 8/9/2016

Analyst: DRS

^{--;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 12-Aug-16

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16080573

Sample Identification GRPCE-19-

Date Sampled: 8/9/2016

Lab Number:

004A

Date Received: 8/9/2016

Sample Type:

Air, Can

Analysis Date: 8/9/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-2.3 psig

Final Pressure:

-2.3 psig

Canister ID:

14001

		Results MDL RL Results MDL RL
CAS#	Analyte	(ug/m²) (ug/m³) (ug/m³) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 0.16 ND 0 0061 0 04 U)1
127-18-4	Tetrachloroethene	0.95 0.036 0.27 0.14 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	15 0.019 0.16 3.8 0.0049 0.04 1
79-01-6	Trichloroethene	0.054 3 0.021 0.21 0.010 3 0.0039 0.04 1
75-01-4	Vinyl Chloride	ND 0.022 0.10 U ND 0.0088 0.04 U 1



RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



TETRA TECH

Project: **GRAND RAPIDS EMERGENCY RESPONSE** Work Order No: 16080573

Date Sampled: 8/9/2016

Sample Identification GRPCE-19-IA-1 (MAIN)

003A Date Received: 8/9/2016

Sample Type: Air, Can Analysis Date: 8/9/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -2.37 psig Final Pressure: -2.37 psig

Canister ID: 14053

Client:

Lab Number:

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qu	ual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 0 160 ND 0 0061 0.04 U 1	
127-18-4	Tetrachloroethene	1.1 0.036 0.27 0.16 0.0053 0.04 1	
156-60-5	trans-1,2-Dichloroethene	20 0.019 0.16 5.2 0.0049 0.04 1	
79-01-6	Trichloroethene	0.054 3 0.021 0.21 0.010 3 0 0039 0.04 1	-0
75-01-4	Vinyl Chloride	MD 0.022 0.10 WD 0.0088 0.04 U 1	



Date: 12-Aug-16

-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL: Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Date: 12-Aug-16

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16080573

Date Sampled: 8/9/2016

Date Received: 8/9/2016

Analysis Date: 8/9/2016

Analyst: DRS

V 14 P 44 P

Lab Number:

001A

Sample Identification GRPCE-20-IA-1)

Sample Type:

Air, Can

Test Method:

EPA Method TO-15A

Initial Pressure:

-2.03 psig

Final Pressure:

-2.03 psig

Canister ID:

14248

CAS#	Analyte		MDL ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	0.040 3	0.024	0.16	0.010	0.0061	0.04	1	+
127-18-4	Tetrachloroethene	1.0	0.036	0.27	0.15	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	1.4	0.019	0.16	0.35	0.0049	0.04	1	
79-01-6	Trichlorocthene	0.11 3	0.021	0.21	0.0203	0 0039	0.04	1	-
75-01-4	Vinyl Chloride	NB	0.022	0.10	U) NE	0 0088	0.04 L	DI	



--; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



trans-1,2-Dichlorocthene

Trichloroethene

Vinyl Chloride

156-60-5

79-01-6

75-01-4

Date: 12-Aug-16

Client: TETRA TECH Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16080573 Sample Identification GRPCE-20-IA 2) Date Sampled: 8/9/2016 Lab Number: 002A Date Received: 8/9/2016 Analysis Date: 8/9/2016 Sample Type: Air, Can EPA Method TO-15A Test Method: Analyst: DRS Initial Pressure: -2.92 psig Final Pressure: -2.92 psig 13969 Canister ID: Results MDL Results MDL RL CAS# Analyte (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual 0.16 U ND 0 0061 0042 156-59-2 cis-1,2-Dichloroethene 0 024 127-18-4 Tetrachloroethene 0.81 0 036 0.12 0.0053 0.04



0.16

0.21

0 10 D

0.20

0 0049

0.010 3 0 0039

ND 0 0088

0.04

0.04

0.04 C

0 019

0 021

0 022

0.79

0 054 J

--; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 12-Aug-16

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16080573

Sample Identification GRPCE-23-OA-

Date Sampled: 8/9/2016

Lab Number:

008A

Date Received: 8/9/2016

Sample Type: Test Method:

Air, Can EPA Method TO-15A Analysis Date: 8/9/2016

Analyst: DRS

Initial Pressure:

-1.07 psig

Final Pressure:

-1.07 psig

Canister ID:

14245

		Results MDL RL Results MDL RL
CAS#	Analyte	(ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 (0.16 U ND 0.0061 (0.04 U) 1
127-18-4	Tetrachloroethene	0.27 0.036 0.27 0.040 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	ND 0.019 0.16 U ND 0.0049 0.04U 1
79-01-6	Trichloroethene	0.054 3 0.021 0.21 0.010 3 00039 0.04 1 V
75-01-4	Vinyl Chloride	ND 0.022 0.100 ND 0.0088 0.040 1



General Notes and Qualifiers:

-; Information not available or not applicable.

ND: Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



August 22, 2016

Betsy Nightingale On-Scene Coordinator U.S. Environmental Protection Agency Region 5 9311 Groh Road Grosse Ile, MI 48138-1697

Subject: Data Validation Reports

Grand Rapids VI ER

EPA Contract No. EP-S5-13-01

Technical Direction Document No. S05-0001-1605-010

Document Tracking No. 1030

Dear Ms. Nightingale:

Tetra Tech Inc. (Tetra Tech) is submitting these Data Validation Reports for 24 air samples (including two field duplicates) collected at the Grand Rapids VI ER site. The samples were collected on August 10 through 16, 2016 and were analyzed for volatile organic compounds by Bureau Veritas Laboratories, ALS Environmental Laboratories, and Eurofins-Air Toxics Laboratory. Tetra Tech received the final data on August 19, 2016.

Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines* (NFG) for Superfund Organic Methods Data Review (August 2014).

No rejection or qualification of results was required for these data sets. The data is usable as reported by the laboratories.

If you have any questions regarding these Data Validation Reports, please call me at (662) 681-5727.

Sincerely,

Jessica A. Vickers START Chemist

Enclosure

cc: Kevin Scott, Tetra Tech Program Manager

Michael Browning, Tetra Tech Project Manager

TDD File

Jesaca a. Vickers

ATTACHMENT 1

DATA VALIDATION REPORTS
BUREAU VERITAS SDGS 16080840 AND 16081037
ALS ENVIRONMENTAL SDG P1603947
EUROFINS-AIR TOXICS SDGS 1608195 AND 1608274

Site Name	Grand Rapids VI ER	TDD No.	S05-0001-1605-010
Document Tracking No.	1030A	1	
Data Reviewer (signature and date)	Jesaca a. Vickers August 15, 2016	Technical Reviewer (signature and date)	Hang N. Elis III 22 August 2016
Laboratory Report No.	16080840	Laboratory	Bureau Veritas/Novi, MI
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15	
Samples and Matrix	Seven air samples		
Field Duplicate Pairs	None		
Field Blanks	None		

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Y	
Initial Calibration:	
Within	Exceedance/Notes
Criteria	Executive y Notes
Υ	
Continuing Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Υ	
Calibration Verification:	
Within	Exceedance/Notes
Criteria	Exact durine, Notes
NA	
Method blanks:	
Within	Exceedance/Notes
Criteria	Endecadinely Notes
Υ	

Exceedance/Notes



Within

Criteria NA

Interference	Check Sam	ples (ICS)	(ICP	metals only	/):
--------------	-----------	------------	------	-------------	-----

Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within	Exceedance/Notes
Criteria	Exceedance/ Notes
NA	



	EFA REGION 5 START CONTRACT
Field duplicates:	
Within	Exceedance/Notes
Criteria	Executance/ Notes
NA	
LCSs/LCSDs:	
Within	- 4
Criteria	Exceedance/Notes
Υ	
Sample dilutions:	
Within	Formandames (Notes
Criteria	Exceedance/Notes
NA	
Re-extraction and reanalysis:	
Within	Exceedance/Notes
Criteria	Exceedance/Notes
NA	
Second column confirmation (GC and I	IPLC analyses only):
Within	Fysoodones/Notes
Criteria	Exceedance/Notes
NA	
Internal Standards:	
Within	Exceedance/Notes
Criteria	·



Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes			
Υ	The laboratory qualified results between the reporting limit and method detection limit as estimated (J).			

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

Other laber	~/\dagger \text{\tiny{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\tiny{\tiny{\text{\text{\text{\text{\text{\text{\tiny{\tiny{\tiny{\tiny{\tiny{\tiny{\tiny{\tiny{\tiny{\tiny{\tiny{\tiny{\tiny{\titil\tiny{\tin}\tiny{\tiny{\tiny{\tiny{\tiny{\tiny{\tiny{\tiny{\tiny{\ti
Within	Evenedance/Notes
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.					





Date: 15-Aug-16

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

BASEMENT)

Work Order No: 16080840

Sample Identification GRPCE-20-IA-

Date Sampled: 8/12/2016

Lab Number:

006A

Date Received: 8/12/2016

Sample Type:

Air, Can

Analysis Date: 8/12/2016

Test Method:

EPA Method TO-15A

Analyst: JTF

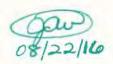
Initial Pressure:

-1.62 psig

Final Pressure: Canister ID:

-1.62 psig 14011

CAS#		Analyte	Results (ug/m³)	MDL (ng/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	Age -	ND	0.024	0 16	NE (U	0 0061	0.040) 1	
127-18-4	Tetrachloroethene		1.0	0.036	0.27	0 15	0 0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene		18	0.019	0.16	46	0.0049	0.04	1	
79-01-6	Trichloroethene		0.11 3	0 021	0.21	0.020 3	0 0039	0.04	1	Je.
75-01-4	Vinyl Chloride		HD	0.022	0.10) NE	0 0088	0.04 U) 1	



S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 15-Aug-16

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16080840

Sample Identification GRPCE-20-IA

MAIN)

Date Sampled: 8/12/2016

Lab Number:

005A

Sample Type:

Date Received: 8/12/2016

Test Method:

Air, Can

Analysis Date: 8/12/2016

Initial Pressure:

EPA Method TO-15A

Analyst: JTF

Final Pressure:

-1.1 psig -1.1 psig

Canister ID:

14610

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m ³) (ug/m ³) (ug/m ³) (ppbV) (ppbV) (ppbV) DF Qua
156-59-2	cis-1,2-Dichloroethene	ND 0.024 0 16 U ND 0 0061 0.04U 1
127-18-4	Tetrachloroethene	0.68 0.036 0.27 0.10 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	5.9 0.019 0.16 1.5 0.0049 0.04 1
79-01-6	Trichloroethene	0.11 3 0.021 0.21 0.020 3 0.0039 0.04 1 +
75-01-4	Vinyl Chloride	ND 0.022 0.10U ND 0.0088 (0.04U)



^{-;} Information not available or not applicable.

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Date: 15-Aug-16

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16080840

Sample Identification GRPCE-20-IA-Lab Number:

004A

Date Sampled: 8/12/2016

Sample Type:

Date Received: 8/12/2016

Air, Can

Analysis Date: 8/12/2016

Test Method:

EPA Method TO-15A

Analyst: JTF

Initial Pressure:

-1.74 psig

Final Pressure:

-1.74 psig

Canister ID:

14141

CAS#	Aı	nalyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene		ND	0.024	0.16	NID.	0.0061	0.040	1	
127-18-4	Tetrachloroethene		1.2	0.036	0.27	0.17	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene		17	0.019	0.16	4.2	0.0049	0.04	1	
79-01-6	Trichloroethene	-	0.054	0.021	0.21	0.010 3	0.0039	0.04	1	+a
75-01-4	Vinyl Chloride		ND	0.022	0.10	GH- (C	0 0088	0.040)1	



E; Value exceeds linear range of calibration curve

J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Date: 15-Aug-16

Client: **TETRA TECH**

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16080840

Sample Identification GRPCE-20-IA-

Date Sampled: 8/12/2016

Lab Number:

003A

Date Received: 8/12/2016

Sample Type:

Project:

Air, Can

Test Method:

EPA Method TO-15A

Analysis Date: 8/12/2016 Analyst: JTF

Initial Pressure:

-1.83 psig

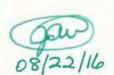
Final Pressure:

-1.83 psig

Canister ID:

13993

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 (0.160) ND 0.0061 (0.040) 1
127-18-4	Tetrachloroethene	1.2 0.036 0.27 0.18 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	21 0.019 0.16 5.4 0.0049 0.04 1
79-01-6	Trichloroethene	0.054 J 0 021 0.21 0.010 J 0.0039 0.04 1 +
75-01-4	Vinyl Chloride	NH 0.022 0.100 ND 0.0088 0.040 1



^{-,} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 15-Aug-16

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16080840

Sample Identification GRPCE-21-IA-

Date Sampled: 8/12/2016

Lab Number:

001A

Date Received: 8/12/2016

Sample Type:

Air, Can

ate Received. 6/12/2010

Test Method:

EPA Method TO-15A

Analysis Date: 8/12/2016

Analyst: JTF

Initial Pressure:

-2.61 psig

Final Pressure:

-2.61 psig

Canister ID:

14124

		Results MDL RL	Results MDL RL
CAS#	Analyte	(ug/m^3) (ug/m^3) (ug/m^3)	(ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	0.040 3 0 024 0.16	6 (0.0103).0061 0.04 1
127-18-4	Tetrachloroethene	0.47 0 036 0.27	7 0.070 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	0.24 / 0.019 0.16	6 0.060 / 0.0049 0.04 1
79-01-6	Trichloroethene	0.21 0.021 0.21	0.040 0.0039 0.04 1
75-01-4	Vinyl Chloride	ND 0.022 0.10	ND 0 0088 (0.04U) 1



B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 15-Aug-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16080840

Sample Identification GRPCE-21-IA- 2) Date Sampled: 8/12/2016

Lab Number: 002A

002A Date Received: 8/12/2016

Sample Type: Air, Can

Test Method:

Air, Can Analysis Date: 8/12/2016
EPA Method TO-15A Analyst: JTF

Initial Pressure: -2.27 psig
Final Pressure: -2.27 psig

Canister ID: 14123

			and the second second second	-	many their contract to the second trace					
CAS#		Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichlorocthene		Gi4	0.024	0.16	U) NE	0 0061	0.040) 1	
127-18-4	Tetrachloroethene	->	0.54	0.036	0.27	0.080	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene		0.12 3	0.019	0.16	0.030 3	0 0049	0.04	1	1
79-01-6	Trichloroethene		0.054	0.021	0.21	0.0103	0 0039	0.04	1	te
75-01-4	Vinyl Chloride		HB	0.022	(0.10	W CU	0 0088	0.040)1	



J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 15-Aug-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16080840

Sample Identification GRPCE-24-OA-Date Sampled: 8/12/2016

Lab Number: 007A

14577

Date Received: 8/12/2016 Analysis Date: 8/12/2016

Sample Type: Air, Can Test Method:

EPA Method TO-15A Analyst: JTF

Initial Pressure: -0.62 psig Final Pressure: -0.62 psig Canister ID:

CAS#	Analyte	Results MDL Rl. Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 (0.16 U) ND 0.0061 (0.04 U) 1
127-18-4	Tetrachloroethene	0.34 0.036 0.27 0.050 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	0.040 J 0 019 0.16 0.010 J 0.0049 0.04 1
79-01-6	Trichloroethene	0.021 0.210 1 0.0039 0.040
75-01-4	Vinyl Chloride	0.022 0.100 0.0088 0.040 1



J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve

Site Name	Grand Rapids VI ER	TDD No.	SOE 0001 160E 010
Document Tracking No.	1030B	122 1121	S05-0001-1605-010
Data Reviewer (signature and date)	Jeoaca a. Vickers August 15, 2016	Technical Reviewer (signature and date)	Hang N. Elis III 22 August 2016
Laboratory Report No.	16081037	Laboratory	Bureau Veritas/Novi, MI
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15	
Samples and Matrix	Six air samples		
Field Duplicate Pairs	None		
Field Blanks	None		

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Y	
Initial Calibration:	
Within	Exceedance/Notes
Criteria	Executive y Notes
Υ	
Continuing Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Υ	
Calibration Verification:	
Within	Exceedance/Notes
Criteria	Exact durine, Notes
NA	
Method blanks:	
Within	Exceedance/Notes
Criteria	Endecadinely Notes
Υ	

Exceedance/Notes



Within

Criteria NA

Interference	Check Sam	ples (ICS)	(ICP	metals only	/):
--------------	-----------	------------	------	-------------	-----

Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within	Exceedance/Notes
Criteria	Exceedance/ Notes
NA	



	EFA REGION 5 START CONTRACT
Field duplicates:	
Within	Exceedance/Notes
Criteria	Executance/ Notes
NA	
LCSs/LCSDs:	
Within	- 4
Criteria	Exceedance/Notes
Υ	
Sample dilutions:	
Within	Formandames (Notes
Criteria	Exceedance/Notes
NA	
Re-extraction and reanalysis:	
Within	Exceedance/Notes
Criteria	Exceedance/Notes
NA	
Second column confirmation (GC and I	IPLC analyses only):
Within	Fysoodones/Notes
Criteria	Exceedance/Notes
NA	
Internal Standards:	
Within	Exceedance/Notes
Criteria	·



Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	The laboratory qualified results between the reporting limit and method detection limit as estimated (J).

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

Other laber	~/\dagger \text{\tiny{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\tiny{\tiny{\text{\text{\text{\text{\text{\text{\tiny{\tiny{\tiny{\tiny{\tiny{\tiny{\tiny{\tiny{\tiny{\tiny{\tiny{\tiny{\tiny{\titil\tiny{\tin}\tiny{\tiny{\tiny{\tiny{\tiny{\tiny{\tiny{\tiny{\tiny{\ti
Within	Evenedance/Notes
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.





Date: 17-Aug-16

Client: TETRA TECH
Project: GRAND RAPII

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16081037

Sample Identification GRPCE-21-IA-

Date Sampled: 8/16/2016

Lab Number:

005A

BASEMENT)

Sample Type:

Air, Can

Date Received: 8/16/2016

Test Method:

...,

Analysis Date: 8/16/2016

Initial Pressure:

EPA Method TO-15A

Analyst: JTF

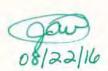
Final Pressure:

-1.90 psig -1.90 psig

Canister ID:

14008

				Results	MDL	RL	Results	MDL	RL		
CAS#		Analyte		(ug/m³)	(ug/m³)	(ug/m ³)	(ppbV)	(ppbV)	(ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene			HD	0.024	0.16	U MB	0 0061	0.040	1	
127-18-4	Tetrachloroethene		- 1	0.95	0.036	0.27	0.14	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene			15	0.019	0.16	3.9	0.0049	0.04	1	
79-01-6	Trichloroethene			0.054	0 021	0.21	0.010 3	0 0039	0.04	1	1
75-01-4	Vinyl Chloride			ND	0.022	0.10	U) NE	0.0088	0.040	1 (



B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 17-Aug-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16081037

Sample Identification GRPCE-21-IA-

Date Sampled: 8/16/2016

Lab Number:

004A

Data Passived 9/16/2016

Sample Type:

Air, Can

Date Received: 8/16/2016

Test Method:

EPA Method TO-15A

Analysis Date: 8/16/2016 Analyst: JTF

Initial Pressure:

-2.36 psig

Final Pressure:

-2.36 psig

Canister ID:

14132

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qua
156-59-2	cis-1,2-Dichloroethene	ND 0.024 0.160 ND 0.0061 0.040 1
127-18-4	Tetrachloroethene	1.2 0.036 0.27 0.17 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	15 0.019 0.16 3.7 0.0049 0.04 1
79-01-6	Trichloroethene	0.054 \$\igcup 0.021 0.21 0.010 \$\igcup 0.0039 0.04 1 \frac{1}{2}
75-01-4	Vinyl Chloride	AHD 0.022 0.10 HD 0 0088 0.04 U 1



B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Date: 17-Aug-16

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16081037

Sample Identification GRPCE-21-IA-Lab Number:

003A

Date Sampled: 8/16/2016

Sample Type:

Date Received: 8/16/2016

Test Method:

Air, Can

Analysis Date: 8/16/2016

Initial Pressure:

EPA Method TO-15A

Analyst: JTF

-2.01 psig -2.01 psig

Final Pressure: Canister ID:

14548

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 0.16 ND 0 0061 0.04 1
127-18-4	Tetrachloroethene	1.3 0.036 0.27 0.19 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	20 0.019 0.16 4.9 0.0049 0.04 1
79-01-6	Trichloroethene	0.054 J 0.021 0.21 0.010 J 0.0039 0.04 1
75-01-4	Vinyl Chloride	NO 0.022 (0.10 U) NO 0.0088 (0.04 U) 1



-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 17-Aug-16

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16081037

Sample Identification GRPCE-22-IA

001A

Date Sampled: 8/16/2016

Lab Number: Sample Type:

Air, Can

Date Received: 8/16/2016

Test Method:

EPA Method TO-15A

Analysis Date: 8/16/2016

Analyst: JTF

Initial Pressure:

-2.9 psig

Final Pressure:

-2.9 psig

Canister ID:

13989

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	0.040	0.024	0.16	0.0103	0.0061	0.04	1	+2
127-18-4	Tetrachloroethene	0.61	0.036	0.27	0.090	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	0.59	0.019	0.16	0.15	0.0049	0.04	1	
79-01-6	Trichloroethene	0.11	0.021	0.21	0.020J	0.0039	0.04	1	10
75-01-4	Vinyl Chloride	114	0.022	0.10	U) NB	0 0088	0.040)1	



B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 17-Aug-16

Date Received: 8/16/2016
Analysis Date: 8/16/2016

Analyst: JTF

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16081037

Sample Identification GRPCE-22-IA- 2) Date Sampled: 8/16/2016

Lab Number: 002A

Sample Type: Air, Can

Test Method: EPA Method TO-15A

Initial Pressure: -2.04 psig
Final Pressure: -2.04 psig

Canister ID: 13933

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qu
156-59-2	cis-1,2-Dichloroethene	ND 0.024 (0.16) ND 0.0061 (0.04) 1
127-18-4	Tetrachloroethene	0.88 0.036 0.27 0.13 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethenc	0.63 0.019 0.16 0.16 0.0049 0.04 1
79-01-6	Trichloroethene	0.054 0.021 0.21 0.010 0.0039 0.04 1
75-01-4	Vinyl Chloride	ND 0.022 0.10U) ND 0.0088 0.04U) 1



B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 17-Aug-16

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16081037

Lab Number:

Sample Identification GRPCE-25-OA

Date Sampled: 8/16/2016

006A

Date Received: 8/16/2016

Sample Type:

Air, Can

Analysis Date: 8/16/2016

Test Method:

EPA Method TO-15A

Analyst: JTF

Initial Pressure:

-1.93 psig

Final Pressure:

-1.93 psig

Canister ID:

14398

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qu	ual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 (0.16) ND 0.0061 (0.04) 1	
127-18-4	Tetrachloroethene	0.14 3 0 036 0.27 0.020 0.0053 0.04 1 +	3e
156-60-5	trans-1,2-Dichloroethene	ND 0.019 0.160 ND 0.0049 0.040 1	
79-01-6	Trichloroethene	0.054 0.021 0.21 0.010 0.0039 0.04 1	ye.
75-01-4	Vinyl Chloride	₩₩ 0.022 (0.10) ₩₩ 0.0088 (0.04 U) 1	



^{-:} Information not available or not applicable.

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

Site Name	Grand Rapids VI ER	TDD No.	S05-0001-1605-010
Document Tracking No.	1030C	I DD NO.	303-0001-1603-010
Data Reviewer (signature and date)	Jeoaca a. Vickers August 22, 2016	Technical Reviewer (signature and date)	Hang N. Elis III 22 August 2016
Laboratory Report No.	P1603947	Laboratory	ALS Laboratories/Simi Valley, CA
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15	
Samples and Matrix	Four air samples (including two field duplication	ates)	
Field Duplicate Pairs	GRPCE-01-SS-	DP and GRPCE-	04-IA- DP
Field Blanks	None		

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Within	
Criteria	Exceedance/Notes
Υ	
nitial Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/Notes
Υ	
ontinuing Calibration:	
Within	Exceedance/Notes
Criteria	
Υ	
alibration Verification:	
Within	Exceedance/Notes
Criteria	Litteedance/Notes
Υ	
lethod blanks:	
Within	Even dence /Netes
Criteria	Exceedance/Notes
Υ	

Exceedance/Notes



Field blanks:
Within

Criteria NA

Interference	Check Sam	ples (ICS)	(ICP	metals only	/):
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Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within	Exceedance/Notes
Criteria	a Laceedance/Notes
NA	



Field duplicates:

Within Criteria	Exceedance/Notes
Υ	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Υ	

Sample dilutions:

Within Criteria			Exceedance/Notes
V	1.54x: VOCs for GRPCE-01-IA-	DP	1.56x: VOCs for GRPCE-01-SS-
Y	1.58x: VOCs for GRPCE-01-IA-		1.69x: VOCs for GRPCE-01-SS-DP

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
Υ	



Target analyte identi	tication	ľ
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Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	All results were either non-detect or above RL

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

o [obo]].									
Within	Exceedance/Notes								
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.



GRAND RAPIDS VI ER ANALYTICAL RESULTS SUMMARY ALS ENVIRONMENTAL REPORT NO. P1603947

Samp_No		Analyte	Result	Lab_Qualifier	Result_Units	MDL	RL	Val_Result	Val_Qualifier
GRPCE-01-SS-		cis-1,2-Dichloroethene	2	U	ppbV	1.8	2	2.0	U
GRPCE-01-SS-		Tetrachloroethene	770	1	ppbV	0.83	1.2	770	
GRPCE-01-SS-		trans-1,2-Dichloroethene	2	U	ppbV	1.8	2	2.0	U
GRPCE-01-SS-		Trichloroethene (TCE)	3.7		ppbV	1.3	1.5	3.7	
GRPCE-01-SS-		Vinyl Chloride	3.1	U	ppbV	2.9	3.1	3.1	U
GRPCE-01-SS-		cis-1,2-Dichloroethene	7.8	U	ug/m3	7.2	7.8	7.8	U
GRPCE-01-SS-		Tetrachloroethene	5200		ug/m3	5.6	7.8	5200	
GRPCE-01-SS-		trans-1,2-Dichloroethene	7.8	U	ug/m3	7.1	7.8	7.8	U
GRPCE-01-SS-		Trichloroethene (TCE)	20	1	ug/m3	6.9	7.8	20	
GRPCE-01-SS-		Vinyl Chloride	7.8	U	ug/m3	7.4	7.8	7.8	U
GRPCE-01-SS-	DP	cis-1,2-Dichloroethene	2.1	U	ppbV	2	2.1	2.1	U
GRPCE-01-SS-	DP	Tetrachloroethene	1000	ı	ppbV	0.9	1.2	1000	
GRPCE-01-SS-	DP	trans-1,2-Dichloroethene	2.1	U	ppbV	1.9	2.1	2.1	U
GRPCE-01-SS-	DP	Trichloroethene (TCE)	4.2		ppbV	1.4	1.6	4.2	
GRPCE-01-SS-	DP	Vinyl Chloride	3.3	U	ppbV	3.1	3.3	3.3	U
GRPCE-01-SS-	DP	cis-1,2-Dichloroethene	8.5	U	ug/m3	7.8	8.5	8.5	U
GRPCE-01-SS-	DP	Tetrachloroethene	7000	1	ug/m3	6.1	8.5	7000	
GRPCE-01-SS-	DP	trans-1,2-Dichloroethene	8.5	U	ug/m3	7.7	8.5	8.5	U
GRPCE-01-SS-	DP	Trichloroethene (TCE)	22		ug/m3	7.5	8.5	22	
GRPCE-01-SS-	DP	Vinyl Chloride	8.5	U	ug/m3	8	8.5	8.5	U
GRPCE-04-IA-		cis-1,2-Dichloroethene	0.04	U	ppbV	0.037	0.04	0.040	U
GRPCE-04-IA-		Tetrachloroethene	0.25		ppbV	0.017	0.023	0.25	
GRPCE-04-IA-		trans-1,2-Dichloroethene	0.04	U	ppbV	0.036	0.04	0.040	U
GRPCE-04-IA-		Trichloroethene (TCE)	0.029	U	ppbV	0.026	0.029	0.029	U
GRPCE-04-IA-		Vinyl Chloride	0.062	U	ppbV	0.059	0.062	0.062	U
GRPCE-04-IA-		cis-1,2-Dichloroethene	0.16	U	ug/m3	0.15	0.16	0.16	U
GRPCE-04-IA-		Tetrachloroethene	1.7		ug/m3	0.11	0.16	1.7	
GRPCE-04-IA-		trans-1,2-Dichloroethene	0.16	U	ug/m3	0.14	0.16	0.16	U
GRPCE-04-IA-		Trichloroethene (TCE)	0.16	U	ug/m3	0.14	0.16	0.16	U
GRPCE-04-IA-		Vinyl Chloride	0.16	U	ug/m3	0.15	0.16	0.16	U
GRPCE-04-IA-	OP	cis-1,2-Dichloroethene	0.039	U	ppbV	0.036	0.039	0.039	U
GRPCE-04-IA-	OP	Tetrachloroethene	0.25		ppbV	0.016	0.023	0.25	
GRPCE-04-IA-	OP	trans-1,2-Dichloroethene	0.039	U	ppbV	0.035	0.039	0.039	U

GRAND RAPIDS VI ER ANALYTICAL RESULTS SUMMARY ALS ENVIRONMENTAL REPORT NO. P1603947

Samp_No		Analyte	Result Lab_Qualifier	Result_Units	MDL F	RL	Val_Result Val_Qualifier
GRPCE-04-IA-	DP	Trichloroethene (TCE)	0.029 U	ppbV	0.026	0.029	0.029 U
GRPCE-04-IA-	DP	Vinyl Chloride	0.06 U	ppbV	0.057	0.06	0.060 U
GRPCE-04-IA-	DP	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-04-IA-	DP	Tetrachloroethene	1.7	ug/m3	0.11	0.15	1.7
GRPCE-04-IA-	DP	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-04-IA-	DP	Trichloroethene (TCE)	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-04-IA-	DP	Vinyl Chloride	0.15 U	ug/m3	0.15	0.15	0.15 U

Site Name	Grand Rapids VI ER	TDD No.	\$05-0001-1605-010
Document Tracking No.	1030D	122 1121	
Data Reviewer (signature and date)	Jeoaca a. Vickers August 22, 2016	Technical Reviewer (signature and date)	Hang N. Ellis III 22 August 2016
Laboratory Report No.	1608195	Laboratory	Eurofins-Air Toxics/Folsom, CA
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15	
Samples and Matrix	One air sample		
Field Duplicate Pairs	None		
Field Blanks	None		

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Within	
Criteria	Exceedance/Notes
Υ	
nitial Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/Notes
Υ	
ontinuing Calibration:	
Within	Exceedance/Notes
Criteria	
Υ	
alibration Verification:	
Within	Exceedance/Notes
Criteria	Litteedance/Notes
Υ	
lethod blanks:	
Within	Evene denne /Netes
Criteria	Exceedance/Notes
Υ	

Exceedance/Notes



Field blanks:
Within

Criteria NA

Interference	Check Sam	ples (ICS)	(ICP	metals only	/):
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Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within	Exceedance/Notes
Criteria	
NA	



Fie	ld c	dup	lica	tes:

Within Criteria	Exceedance/Notes
NA	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Υ	

Sample dilutions:

Within Criteria	Exceedance/Notes
Υ	4.00x: GRPCE-01-SS-

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
Υ	



Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	Results between the method detection limit and the reporting limit with qualified as estimated (J) by the laboratory.

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

Other labe	
Within	Even adams / Nintes
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.



CLIENTSAMPID	COMPOUND NAME	RESULTS	DATAFLAGS	MDL	REPLMT	UNITS	VALRESULTS	VALFLAGS
GRPCE-01-SS-	Vinyl Chloride		ND	0.089	0.40	PPBV	0.40	U
GRPCE-01-SS-	trans-1,2-Dichloroethene		ND	0.12	0.40	PPBV	0.40	U
GRPCE-01-SS-	cis-1,2-Dichloroethene		ND	0.11	0.40	PPBV	0.40	U
GRPCE-01-SS-	Trichloroethene	0.17	J	0.12	0.40	PPBV	0.17	J
GRPCE-01-SS-	Tetrachloroethene	100		0.11	0.40	PPBV	100	
GRPCE-01-SS-	Vinyl Chloride		ND	0.23	1.0	UG/M3	1.0	U
GRPCE-01-SS-	trans-1,2-Dichloroethene		ND	0.47	1.6	UG/M3	1.6	U
GRPCE-01-SS-	cis-1,2-Dichloroethene		ND	0.46	1.6	UG/M3	1.6	U
GRPCE-01-SS-	Trichloroethene	0.91	J	0.64	2.1	UG/M3	0.91	J
GRPCE-01-SS-	Tetrachloroethene	690		0.74	2.7	UG/M3	690	

Site Name	Grand Rapids VI ER	TDD No.	S05-0001-1605-010	
Document Tracking No.	1030E	1		
Data Reviewer (signature and date)	Jeoaca a. Vickers August 22, 2016	Technical Reviewer (signature and date)	Hang N. Elis III 22 August 2016	
Laboratory Report No.	1608274	Laboratory	Eurofins-Air Toxics/Folsom, CA	
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15		
Samples and Matrix	Six air samples			
Field Duplicate Pairs	None			
Field Blanks	None			

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Within	
Criteria	Exceedance/Notes
Υ	
nitial Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/Notes
Υ	
ontinuing Calibration:	
Within	Exceedance/Notes
Criteria	
Υ	
alibration Verification:	
Within	Exceedance/Notes
Criteria	Litteedance/Notes
Υ	
lethod blanks:	
Within	Even dence /Netes
Criteria	Exceedance/Notes
Υ	

Exceedance/Notes



Field blanks:
Within

Criteria NA

Interference	Check Sam	ples (ICS)	(ICP	metals only	/):
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Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within	Exceedance/Notes
Criteria	
NA	



Field duplicates:

Within Criteria	Exceedance/Notes
NA	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Υ	

Sample dilutions:

Within Criteria		Ехс	eedance/Notes	
	1.63x: GRPCE-02-IA-02-	(Basement)	1.86x: GRPCE-02-IA-02-	(Main)
Υ	1.76x: GRPCE-02-IA-02-	(Main)	1.89x: GRPCE-02-IA-02-	(Main)
	1.77x: GRPCE-02-IA-02-	(Basement)	2.18x: GRPCE-02-IA-02-	(Basement)

Re-extraction and reanalysis:

······································		
Within	Fuse adapted /Nichoo	
Criteria	Exceedance/Notes	
NA		

Second column confirmation (GC and HPLC analyses only):

Within Criteria	Exceedance/Notes
NA	



Internal Standards:

Within Criteria	Exceedance/Notes
Υ	

Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	Results between the method detection limit and the reporting limit with qualified as estimated (J) by the laboratory.

Tentatively identified compounds:

	,
Within	Even dance / Notes
Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within	Exceedance/Notes
Criteria	
Υ	

Other [specify]:

other (specify).		
Within	Fuse adense /Notes	
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.



CLIENTSAMPID		COMPOUND NAME	RESULTS	DATAFLAGS	MDL	REPLMT	UNITS	VALRESULTS	VALFLAGS
GRPCE-02-IA-02-	(Basement)	cis-1,2-Dichloroethene		ND	0.058	0.18	PPBV	0.18	U
GRPCE-02-IA-02-	(Basement)	Tetrachloroethene	0.52		0.028	0.18	PPBV	0.52	
GRPCE-02-IA-02-	(Basement)	trans-1,2-Dichloroethene		ND	0.041	0.18	PPBV	0.18	U
GRPCE-02-IA-02-	(Basement)	Trichloroethene		ND	0.059	0.18	PPBV	0.18	U
GRPCE-02-IA-02-	(Basement)	Vinyl Chloride		ND	0.046	0.18	PPBV	0.18	U
GRPCE-02-IA-02-	(Basement)	cis-1,2-Dichloroethene		ND	0.23	0.70	UG/M3	0.70	U
GRPCE-02-IA-02-	(Basement)	Tetrachloroethene	3.5		0.19	1.2	UG/M3	3.5	
GRPCE-02-IA-02-	(Basement)	trans-1,2-Dichloroethene		ND	0.16	0.70	UG/M3	0.70	U
GRPCE-02-IA-02-	(Basement)	Trichloroethene		ND	0.32	0.95	UG/M3	0.95	U
GRPCE-02-IA-02-	(Basement)	Vinyl Chloride		ND	0.12	0.45	UG/M3	0.45	U
GRPCE-02-IA-02-	(Main)	cis-1,2-Dichloroethene		ND	0.062	0.19	PPBV	0.19	U
GRPCE-02-IA-02-	(Main)	Tetrachloroethene	0.16	J	0.030	0.19	PPBV	0.16	J
GRPCE-02-IA-02-	(Main)	trans-1,2-Dichloroethene		ND	0.044	0.19	PPBV	0.19	U
GRPCE-02-IA-02-	(Main)	Trichloroethene		ND	0.064	0.19	PPBV	0.19	U
GRPCE-02-IA-02-	(Main)	Vinyl Chloride		ND	0.050	0.19	PPBV	0.19	U
GRPCE-02-IA-02-	(Main)	cis-1,2-Dichloroethene		ND	0.24	0.75	UG/M3	0.75	U
GRPCE-02-IA-02-	(Main)	Tetrachloroethene	1.1	J	0.20	1.3	UG/M3	1.1	J
GRPCE-02-IA-02-	(Main)	trans-1,2-Dichloroethene		ND	0.17	0.75	UG/M3	0.75	U
GRPCE-02-IA-02-	(Main)	Trichloroethene		ND	0.34	1.0	UG/M3	1.0	U
GRPCE-02-IA-02-	(Main)	Vinyl Chloride		ND	0.13	0.48	UG/M3	0.48	U
GRPCE-02-IA-02-	(Basement)	cis-1,2-Dichloroethene		ND	0.053	0.16	PPBV	0.16	U
GRPCE-02-IA-02-	(Basement)	Tetrachloroethene	0.73		0.026	0.16	PPBV	0.73	
GRPCE-02-IA-02-	(Basement)	trans-1,2-Dichloroethene		ND	0.038	0.16	PPBV	0.16	U
GRPCE-02-IA-02-	(Basement)	Trichloroethene		ND	0.055	0.16	PPBV	0.16	U
GRPCE-02-IA-02-	(Basement)	Vinyl Chloride		ND	0.043	0.16	PPBV	0.16	U
GRPCE-02-IA-02-	(Basement)	cis-1,2-Dichloroethene		ND	0.21	0.65	UG/M3	0.65	U
GRPCE-02-IA-02-	(Basement)	Tetrachloroethene	5.0		0.18	1.1	UG/M3	5.0	
GRPCE-02-IA-02-	(Basement)	trans-1,2-Dichloroethene		ND	0.15	0.65	UG/M3	0.65	U
GRPCE-02-IA-02-	(Basement)	Trichloroethene		ND	0.29	0.88	UG/M3	0.88	U
GRPCE-02-IA-02-	(Basement)	Vinyl Chloride		ND	0.11	0.42	UG/M3	0.42	U
GRPCE-02-IA-02-	(Main)	cis-1,2-Dichloroethene		ND	0.061	0.19	PPBV	0.19	U
GRPCE-02-IA-02-	(Main)	Tetrachloroethene	0.086	J	0.030	0.19	PPBV	0.086	J
GRPCE-02-IA-02-	(Main)	trans-1,2-Dichloroethene		ND	0.043	0.19	PPBV	0.19	U
GRPCE-02-IA-02-	(Main)	Trichloroethene		ND	0.062	0.19	PPBV	0.19	U
GRPCE-02-IA-02-	(Main)	Vinyl Chloride		ND	0.049	0.19	PPBV	0.19	U
GRPCE-02-IA-02-	(Main)	cis-1,2-Dichloroethene		ND	0.24	0.74	UG/M3	0.74	U
GRPCE-02-IA-02-	(Main)	Tetrachloroethene	0.58	J	0.20	1.3	UG/M3	0.58	J
GRPCE-02-IA-02-	(Main)	trans-1,2-Dichloroethene		ND	0.17	0.74	UG/M3	0.74	U
GRPCE-02-IA-02-	(Main)	Trichloroethene		ND	0.34	1.0	UG/M3	1.0	U
GRPCE-02-IA-02-	(Main)	Vinyl Chloride		ND	0.12	0.48	UG/M3	0.48	U

CLIENTSAMPID		COMPOUND NAME	RESULTS	DATAFLAGS	MDL	REPLMT	UNITS	VALRESULTS	VALFLAGS
GRPCE-02-IA-02-	(Basement)	cis-1,2-Dichloroethene		ND	0.071	0.22	PPBV	0.22	U
GRPCE-02-IA-02-	(Basement)	Tetrachloroethene	0.32		0.035	0.22	PPBV	0.32	
GRPCE-02-IA-02-	(Basement)	trans-1,2-Dichloroethene		ND	0.051	0.22	PPBV	0.22	U
GRPCE-02-IA-02-	(Basement)	Trichloroethene		ND	0.073	0.22	PPBV	0.22	U
GRPCE-02-IA-02-	(Basement)	Vinyl Chloride		ND	0.057	0.22	PPBV	0.22	U
GRPCE-02-IA-02-	(Basement)	cis-1,2-Dichloroethene		ND	0.28	0.86	UG/M3	0.86	U
GRPCE-02-IA-02-	(Basement)	Tetrachloroethene	2.1		0.24	1.5	UG/M3	2.1	
GRPCE-02-IA-02-	(Basement)	trans-1,2-Dichloroethene		ND	0.20	0.86	UG/M3	0.86	U
GRPCE-02-IA-02-	(Basement)	Trichloroethene		ND	0.39	1.2	UG/M3	1.2	U
GRPCE-02-IA-02-	(Basement)	Vinyl Chloride		ND	0.15	0.56	UG/M3	0.56	U
GRPCE-02-IA-02-	(Main)	cis-1,2-Dichloroethene		ND	0.057	0.18	PPBV	0.18	U
GRPCE-02-IA-02-	(Main)	Tetrachloroethene	0.086	J	0.028	0.18	PPBV	0.086	J
GRPCE-02-IA-02-	(Main)	trans-1,2-Dichloroethene		ND	0.041	0.18	PPBV	0.18	U
GRPCE-02-IA-02-	(Main)	Trichloroethene	0.069	J	0.059	0.18	PPBV	0.069	J
GRPCE-02-IA-02-	(Main)	Vinyl Chloride		ND	0.046	0.18	PPBV	0.18	U
GRPCE-02-IA-02-	(Main)	cis-1,2-Dichloroethene		ND	0.23	0.70	UG/M3	0.70	U
GRPCE-02-IA-02-	(Main)	Tetrachloroethene	0.58	J	0.19	1.2	UG/M3	0.58	J
GRPCE-02-IA-02-	(Main)	trans-1,2-Dichloroethene		ND	0.16	0.70	UG/M3	0.70	U
GRPCE-02-IA-02-	(Main)	Trichloroethene	0.37	J	0.32	0.94	UG/M3	0.37	J
GRPCE-02-IA-02-	(Main)	Vinyl Chloride		ND	0.12	0.45	UG/M3	0.45	U



September 1, 2016

Betsy Nightingale On-Scene Coordinator U.S. Environmental Protection Agency Region 5 9311 Groh Road Grosse Ile, MI 48138-1697

Subject: Data Validation Report

Grand Rapids VI ER

EPA Contract No. EP-S5-13-01

Technical Direction Document No. S05-0001-1605-010

Document Tracking No. 1051

Dear Ms. Nightingale:

Tetra Tech Inc. (Tetra Tech) is submitting this Data Validation Report for eight air samples collected at the Grand Rapids VI ER site. The samples were collected on August 19, 2016 and were analyzed for volatile organic compounds by Eurofins-Air Toxics Laboratory. Tetra Tech received the final data on August 24, 2016.

Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines* (NFG) for Superfund Organic Methods Data Review (August 2014).

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

If you have any questions regarding this Data Validation Report, please call me at (662) 681-5727.

Sincerely,

Jessica A. Vickers START Chemist

Enclosure

cc: Kevin Scott, Tetra Tech Program Manager

Michael Browning, Tetra Tech Project Manager

TDD File

Jesaca a. Vickers

ATTACHMENT 1

DATA VALIDATION REPORT EUROFINS-AIR TOXICS SDGS 1608384

Site Name	Site Name Grand Rapids VI ER		\$05-0001-1605-010		
Document Tracking No.	1051	TDD No.	303-0001-1603-010		
Data Reviewer (signature and date)	Jeoaca a Vickers August 22, 2016	Technical Reviewer (signature and date)	Hang N. Elis III 30 August 2016		
Laboratory Report No.	1608384	Laboratory	Eurofins-Air Toxics/Folsom, CA		
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15			
Samples and Matrix	Eight air samples				
Field Duplicate Pairs	None				
Field Blanks	None				

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrument Performance Checks:	
Within	
Criteria	Exceedance/Notes
Υ	
,	
Initial Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Y	
Continuing Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/Notes
Y	
Calibration Verification:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Y	
Method blanks:	
Within	Evenedones /Netes
Criteria	Exceedance/Notes
Υ	

Field blanks:

Vithin riteria	Exceedance/Notes
NA	



Interference Check Sam	iples (ICS)) (ICP	metals	only):
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Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

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
NA	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Υ	

Sample dilutions:

Within Criteria	Exceedance/Notes			
	1.66x: GRPCE-03-IA-	(Main)	1.91x: GRPCE-03-IA-	(Basement)
Υ	1.67x: GRPCE-01-IA-	(Basement)	5.53x: GRPCE-01-IA-	(Main)
	1.75x: GRPCE-03-IA-	(Basement)	8.00x: GRPCE-03-IA-	(Main)
	1.84x: GRPCE-03-IA-	(Main)	8.35x: GRPCE-03-IA-	(Basement)

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
Υ	

Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	Results between the method detection limit and the reporting limit with qualified as estimated (J) by the laboratory.

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

Othici [spc	cnyj.
Within	Evenedones /Netes
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:

1	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.
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.



CLIENTSAMPID	COMPOUND NAME	RESULTS	DATAFLAGS	MDL	REPLMT	UNITS	VALRESULTS	VALFLAGS
GRPCE-01-IA- (Main)	Vinyl Chloride		ND	0.14	0.55	PPBV	0.55	U
GRPCE-01-IA- (Main)	trans-1,2-Dichloroethene		ND	0.13	0.55	PPBV	0.55	U
GRPCE-01-IA- (Main)	cis-1,2-Dichloroethene		ND	0.18	0.55	PPBV	0.55	U
GRPCE-01-IA- (Main)	Trichloroethene		ND	0.18	0.55	PPBV	0.55	U
GRPCE-01-IA- (Main)	Tetrachloroethene	0.31	J	0.088	0.55	PPBV	0.31	J
GRPCE-01-IA- (Main)	Vinyl Chloride		ND	0.37	1.4	UG/M3	1.4	U
GRPCE-01-IA- (Main)	trans-1,2-Dichloroethene		ND	0.51	2.2	UG/M3	2.2	U
GRPCE-01-IA- (Main)	cis-1,2-Dichloroethene		ND	0.72	2.2	UG/M3	2.2	U
GRPCE-01-IA- (Main)	Trichloroethene		ND	1.0	3.0	UG/M3	3.0	U
GRPCE-01-IA- (Main)	Tetrachloroethene	2.1	J	0.60	3.8	UG/M3	2.1	J
GRPCE-01-IA- (Basement)	Vinyl Chloride		ND	0.044	0.17	PPBV	0.17	U
GRPCE-01-IA- (Basement)	trans-1,2-Dichloroethene		ND	0.039	0.17	PPBV	0.17	U
GRPCE-01-IA- (Basement)	cis-1,2-Dichloroethene		ND	0.054	0.17	PPBV	0.17	U
GRPCE-01-IA- (Basement)	Trichloroethene		ND	0.056	0.17	PPBV	0.17	U
GRPCE-01-IA- (Basement)	Tetrachloroethene	1.1		0.027	0.17	PPBV	1.1	
GRPCE-01-IA- (Basement)	Vinyl Chloride		ND	0.11	0.43	UG/M3	0.43	U
GRPCE-01-IA- (Basement)	trans-1,2-Dichloroethene		ND	0.15	0.66	UG/M3	0.66	U
GRPCE-01-IA- (Basement)	cis-1,2-Dichloroethene		ND	0.22	0.66	UG/M3	0.66	U
GRPCE-01-IA- (Basement)	Trichloroethene		ND	0.30	0.90	UG/M3	0.90	U
GRPCE-01-IA- (Basement)	Tetrachloroethene	7.6		0.18	1.1	UG/M3	7.6	
GRPCE-03-IA- (Main)	Vinyl Chloride		ND	0.21	0.80	PPBV	0.80	U
GRPCE-03-IA- (Main)	trans-1,2-Dichloroethene		ND	0.19	0.80	PPBV	0.80	U
GRPCE-03-IA- (Main)	cis-1,2-Dichloroethene		ND	0.26	0.80	PPBV	0.80	U
GRPCE-03-IA- (Main)	Trichloroethene		ND	0.27	0.80	PPBV	0.80	U
GRPCE-03-IA- (Main)	Tetrachloroethene		ND	0.13	0.80	PPBV	0.80	U
GRPCE-03-IA- (Main)	Vinyl Chloride		ND	0.54	2.0	UG/M3	2.0	U
GRPCE-03-IA- (Main)	trans-1,2-Dichloroethene		ND	0.74	3.2	UG/M3	3.2	U
GRPCE-03-IA- (Main)	cis-1,2-Dichloroethene		ND	1.0	3.2	UG/M3	3.2	U
GRPCE-03-IA- (Main)	Trichloroethene		ND	1.4	4.3	UG/M3	4.3	U
GRPCE-03-IA- (Main)	Tetrachloroethene		ND	0.86	5.4	UG/M3	5.4	U
GRPCE-03-IA- (Basement)	Vinyl Chloride		ND	0.046	0.18	PPBV	0.18	U
GRPCE-03-IA- (Basement)	trans-1,2-Dichloroethene		ND	0.041	0.18	PPBV	0.18	U
	cis-1,2-Dichloroethene		ND	0.057	0.18	PPBV	0.18	U
GRPCE-03-IA- (Basement)	Trichloroethene		ND	0.059		PPBV	0.18	U
GRPCE-03-IA- (Basement)	Tetrachloroethene	0.19		0.028		PPBV	0.19	
	Vinyl Chloride		ND	0.12	0.45	UG/M3		U
	trans-1,2-Dichloroethene		ND	0.16	0.69	UG/M3	0.69	U
GRPCE-03-IA- (Basement)	cis-1,2-Dichloroethene		ND	0.23	0.69	UG/M3	0.69	U
GRPCE-03-IA- (Basement)	Trichloroethene		ND	0.32	0.94	UG/M3	0.94	U

CLIENTSAMP	ID	COMPOUND NAME	RESULTS	DATAFLAGS	MDL	REPLMT	UNITS	VALRESULTS	VALFLAGS
GRPCE-03-IA-	(Basement)	Tetrachloroethene	1.3		0.19	1.2	UG/M3	1.3	
GRPCE-03-IA-	(Main)	Vinyl Chloride		ND	0.048	0.18	PPBV	0.18	U
GRPCE-03-IA-	(Main)	trans-1,2-Dichloroethene		ND	0.043	0.18	PPBV	0.18	U
GRPCE-03-IA-	(Main)	cis-1,2-Dichloroethene		ND	0.060	0.18	PPBV	0.18	U
GRPCE-03-IA-	(Main)	Trichloroethene		ND	0.062	0.18	PPBV	0.18	U
GRPCE-03-IA-	(Main)	Tetrachloroethene	0.18		0.029	0.18	PPBV	0.18	
GRPCE-03-IA-	(Main)	Vinyl Chloride		ND	0.12	0.47	UG/M3	0.47	U
GRPCE-03-IA-	(Main)	trans-1,2-Dichloroethene		ND	0.17	0.73	UG/M3	0.73	U
GRPCE-03-IA-	(Main)	cis-1,2-Dichloroethene		ND	0.24	0.73	UG/M3	0.73	U
GRPCE-03-IA-	(Main)	Trichloroethene		ND	0.33	0.99	UG/M3		U
GRPCE-03-IA-	(Main)	Tetrachloroethene	1.2		0.20	1.2	UG/M3		
GRPCE-03-IA-	(Basement)	Vinyl Chloride		ND	0.050	0.19	PPBV	0.19	U
GRPCE-03-IA-	(Basement)	trans-1,2-Dichloroethene		ND	0.044		PPBV	0.19	Ū
GRPCE-03-IA-	(Basement)	cis-1,2-Dichloroethene		ND	0.062		PPBV	0.19	Ū
GRPCE-03-IA-	(Basement)	Trichloroethene		ND	0.064		PPBV	0.19	U
GRPCE-03-IA-	(Basement)	Tetrachloroethene	0.41		0.030		PPBV	0.41	
GRPCE-03-IA-	(Basement)	Vinyl Chloride		ND	0.13	0.49	UG/M3		U
GRPCE-03-IA-	(Basement)	trans-1,2-Dichloroethene		ND	0.18	0.76	UG/M3		Ū
GRPCE-03-IA-	(Basement)	cis-1,2-Dichloroethene		ND	0.25	0.76	UG/M3		Ū
GRPCE-03-IA-	(Basement)	Trichloroethene		ND	0.34	1.0	UG/M3		Ū
GRPCE-03-IA-	(Basement)	Tetrachloroethene	2.8		0.21	1.3	UG/M3		
GRPCE-03-IA-	(Main)	Vinyl Chloride		ND	0.044	0.17	PPBV	0.17	U
GRPCE-03-IA-	(Main)	trans-1,2-Dichloroethene		ND	0.038	0.17	PPBV	0.17	U
GRPCE-03-IA-	(Main)	cis-1,2-Dichloroethene		ND	0.054		PPBV	0.17	U
GRPCE-03-IA-	(Main)	Trichloroethene		ND	0.056		PPBV	0.17	U
GRPCE-03-IA-	(Main)	Tetrachloroethene	0.15	J	0.026		PPBV	0.15	J
GRPCE-03-IA-	(Main)	Vinyl Chloride		ND	0.11	0.42	UG/M3		U
GRPCE-03-IA-	(Main)	trans-1,2-Dichloroethene		ND	0.15	0.66	UG/M3		U
GRPCE-03-IA-	(Main)	cis-1,2-Dichloroethene		ND	0.21	0.66	UG/M3		U
GRPCE-03-IA-	(Main)	Trichloroethene		ND	0.30	0.89	UG/M3		U
GRPCE-03-IA-	(Main)	Tetrachloroethene	1.0	J	0.18	1.1	UG/M3		J
GRPCE-03-IA-	(Basement)	Vinyl Chloride		ND	0.22	0.84	PPBV	0.84	U
GRPCE-03-IA-	(Basement)	trans-1,2-Dichloroethene		ND	0.19	0.84	PPBV	0.84	Ū
GRPCE-03-IA-	(Basement)	cis-1,2-Dichloroethene		ND	0.27	0.84	PPBV	0.84	Ü
GRPCE-03-IA-	(Basement)	Trichloroethene		ND	0.28	0.84	PPBV	0.84	Ü
GRPCE-03-IA-	(Basement)	Tetrachloroethene	0.43	J	0.13	0.84	PPBV	0.43	J
GRPCE-03-IA-	(Basement)	Vinyl Chloride		ND	0.56	2.1	UG/M3		U
GRPCE-03-IA-	(Basement)	trans-1,2-Dichloroethene		ND	0.77	3.3	UG/M3		Ü
GRPCE-03-IA-	(Basement)	cis-1,2-Dichloroethene		ND	1.1	3.3	UG/M3		Ü
	• · · · · · · · · · · · · · · · · · · ·	,							

CLIENTSAMPID		COMPOUND NAME	RESULTS	DATAFLAGS	MDL	REPLMT	UNITS	VALRESULTS	VALFLAGS
GRPCE-03-IA-	(Basement)	Trichloroethene		ND	1.5	4.5	UG/M3	4.5	U
GRPCE-03-IA-	(Basement)	Tetrachloroethene	2.9	J	0.90	5.7	UG/M3	2.9	J



September 9, 2016

Betsy Nightingale On-Scene Coordinator U.S. Environmental Protection Agency Region 5 9311 Groh Road Grosse Ile, MI 48138-1697

Subject: Data Validation Reports

Grand Rapids VI ER

EPA Contract No. EP-S5-13-01

Technical Direction Document No. S05-0001-1605-010

Document Tracking No. 1063

Dear Ms. Nightingale:

Tetra Tech Inc. (Tetra Tech) is submitting these Data Validation Reports for 37 air samples (including two field duplicates) collected at the Grand Rapids VI ER site. The samples were collected on August 19 through 31, 2016 and were analyzed for volatile organic compounds by Bureau Veritas Laboratories and Eurofins-Air Toxics Laboratory. Tetra Tech received the final data on September 7, 2016.

Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines* (NFG) for Superfund Organic Methods Data Review (August 2014).

No rejection of results was required for this data set. The data is usable as qualified based on the findings of this validation effort.

If you have any questions regarding these Data Validation Reports, please call me at (662) 681-5727.

Sincerely,

Jessica A. Vickers START Chemist

Enclosure

cc: Kevin Scott, Tetra Tech Program Manager

Michael Browning, Tetra Tech Project Manager

TDD File

Jesaca a Vickers

ATTACHMENT 1

DATA VALIDATION REPORTS BUREAU VERITAS SDGS 16081382, 16081524, 16081927, AND 16090184 EUROFINS-AIR TOXICS SDG 1609003

Site Name	Grand Rapids VI ER	TDD No.	SOE 0001 160E 010		
Document Tracking No.	1063A	וטט אס.	S05-0001-1605-010		
Data Reviewer (signature and date)	Jesaca A. Vickers September 8, 2016	Technical Reviewer (signature and date)	9 September 2016		
Laboratory Report No.	16081382	Laboratory	Bureau Veritas/Novi, MI		
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15			
Samples and Matrix	Eight air samples (including a field duplicat	e)			
Field Duplicate Pairs	GRPCE-23-IA- 1)/GRPCE-23-IA- 1)-DP				
Field Blanks	None				

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection of results was required for this data set. The data is usable as qualified based on the findings of this validation effort.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrument Performance Checks:

Within Criteria	Exceedance/Notes
Υ	

Initial Calibration:

Within Criteria	Exceedance/Notes
Y	

Continuing Calibration:

Within Criteria	Exceedance/Notes
N	The percent differences exceeded the acceptance limits for cis-1,2-dichloroethene and trans-1,2-dichloroethene; therefore, the results were qualified as estimated (J/UJ) unless previously qualified for other exceedances.

Calibration Verification:

Within Criteria	Exceedance/Notes
NA	



Method blanks:

Within Criteria	Exceedance/Notes
	All five VOCs were detected in the method blank below the reporting limit (RL). Results below the RL were raised to the RL and qualified as non-detect (U). Results above the RL but less than ten times the blank concentration were qualified as estimated with a possible high bias (J+). No qualifications were applied for results greater than ten times the blank concentrations. The following qualifications were applied:
N	Flag "J+": Tetrachloroethene for GRPCE-23-IA- 1)-DP and GRPCE-26-OA- Tetrachloroethene and trans-1,2-dichloroethene for GRPCE-23-IA- 1) trans-1,2-Dichloroethene for GRPCE-22-IA- 2)
	Raise to RL and flag "U": cis-1,2-Dichloroethene and trichloroethene for GRPCE-23-IA- trans-1,2-Dichloroethene and trichloroethene for GRPCE-23-IA- Trichloroethene for GRPCE-22-IA- GRPCE-22-IA- and GRPCE-22-IA- and GRPCE-22-IA- 2)

Field blanks:

Within Criteria	Exceedance/Notes
NA	

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

Within Criteria	Exceedance/Notes
NA	



System monitoring compounds (surrogates and labeled compounds):

System monitoring compounds (surrog	
Within	Exceedance/Notes
Criteria	
Υ	
200/200	
MS/MSD:	
Within	Exceedance/Notes
Criteria	
NA	
Post digestion spikes:	
Within	Even de vez /Netes
Criteria	Exceedance/Notes
NA	
Serial dilutions:	
Within	Fuer adams / Natas
Criteria	Exceedance/Notes
NA	
Laboratory duplicates:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
NA	
Field duplicates:	
Within	Exceedance/Notes
Criteria	LACECUATICE/ NOTES
Y	



	EPA REGION 5 START CONTRACT
LCSs/LCSDs:	
Within	Exceedance/Notes
Criteria	Exceedance/Notes
Υ	
Sample dilutions:	
Within	Fuency deman / Nietro
Criteria	Exceedance/Notes
NA	
Re-extraction and reanalysis:	
Within	- 1 /01 -
Criteria	Exceedance/Notes
NA	
Second column confirmation (GC and	HPLC analyses only):
Within	Exceedance/Notes
NA NA	
107	
Internal Standards:	
Within	Exceedance/Notes
Criteria	Exceedance/Notes
Υ	
Target analyte identification:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes



Analyte quantitation and MDLs/RLs:

Within Criteria	FXCPPGANCE/NOTES
Υ	

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

other [speeding].	
Within	Even adams / Notes
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.





Date: 22-Aug-16

Client:	TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16081382

Sample Identification GRPCE-22-IA-

BASEMENT) Date Sampled: 8/19/2016

Lab Number:

DASEMEN

Date Sampled: 6/17/2010

Sample Type:

007A

Date Received: 8/19/2016

ompie Type.

Air, Can

Analysis Date: 8/21/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-1.75 psig

Final Pressure: Canister ID: -1.75 psig 13997

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qu
156-59-2	cis-1,2-Dichloroethene	ND 0.024 0.16 0 ND 0 0061 (0.04 UD)
127-18-4	Tetrachloroethene	1.0 0.036 0.27 0.15 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	145 0.019 0.16 3.65 0.0049 0.04 1
79-01-6	Trichloroethene	-0.054 0.021 0.2140.010 0.0039 0.044 1
75-01-4	Vinyl Chloride	ND 0.022 0.10W ND 0.0088 0.04W



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J: Value is between the MDL and Reporting Limit, estimated \boldsymbol{r}

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 22-Aug-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16081382

Sample Identification GRPCE-22-IA-

MAIN) Date Sampled: 8/19/2016

Lab Number: 006A

Date Received: 8/19/2016

Sample Type: Air, Can

Analysis Date: 8/21/2016

Test Method:

EPA Method TO-15A Analyst: DRS

Initial Pressure:

-1.77 psig

Final Pressure:

-1.77 psig

Canister ID:

14128

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	HD	0.024	0.16	CH CE	0 0061	(0.04 L	0	
127-18-4	Tetrachloroethene	0.75	0.036	0.27	0.11	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	4.230	0.019	0.16	1.15	0.0049	0.04	1	
79-01-6	Trichloroethene	0-11-	0.021	0.21	10,020	0.0039	0.04L	1/1	1
75-01-4	Vinyl Chloride	CI4	0.022	0.10	U) NB	0 0088	0.04	1	



RL; Report Limit

 $J_{\tilde{r}}$ Value is between the MDL and Reporting Limit, estimated \boldsymbol{r}

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 22-Aug-16

Client: TETRA TECH

Canister ID:

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16081382

Sample Identification GRPCE-22-IA-

14571

tion GRPCE-22-IA-Date Sampled: 8/19/2016

Lab Number: 005A Date Received: 8/19/2016

Sample Type: Air, Can Analysis Date: 8/21/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -1.61 psig
Final Pressure: -1.61 psig

CAS# Analyte Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) DF Qua

nlorocthene	ND.	0.024	0.161	HP (E)	0 0061	0.044	20)	
cthene	1.3	0.036	0.27	(0.19	0.0053	0.04	1	
chloroethene	1437	0.019	0.16	3.6.7	0.0049	0.04	1	
nene	0.054	0.021	0.211	0.010	0.0039	004U	1	y
ide	NĐ	0.022	0.100	UND	0 0088	0 044	1	
	ethene ichloroethene nene ride	ichloroethene 14 3	ichloroethene 0.019 hene 0.021	ichloroethene 0.019 0.16 0.021 0.21	ichloroethene 0.019 0.16 3.65 0.021 0.21 0.21 0.21 0.21	ichloroethene 0.019 0.16 3.65 0.0049 0.021 0.21 0.0039	ichloroethene 0.019 0.16 3.65 0.0049 0.04 0.0019 0.0039 0.04	ichloroethene 0.019 0.16 3.65 0.0049 0.04 1 0.0054 0.021 0.21 0.0039 0.04 1



B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 22-Aug-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16081382

Sample Identification GRPCE-22-IA

Date Sampled: 8/19/2016

Lab Number:

004A

vate Sampled. 6/17/2010

Sample Type:

Air, Can

Date Received: 8/19/2016

Test Method:

Air, Can

Analysis Date: 8/21/2016

Interest Description

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-1.31 psig

Final Pressure:

-1.31 psig

Canister ID:

14399

CAS#	Analyte	Results (ug/m³)	MDI. (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	ND	0.024	6.16	HD HD	0 0061	(0 04 L	D	
127-18-4	Tetrachloroethene	1.4	0.036	0.27	0.21	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	173	0.019	0.16	4.25	0.0049	0.04	1	
79-01-6	Trichloroethene	-0.054	0.021	0.21	48.010	0.0039	0.04U	1	1
75-01-4	Vinyl Chloride	Qi4-	0.022	0.10	U) NB	0 0088	0.044	1	



^{--;} Information not available or not applicable.

RL: Report Limi

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 22-Aug-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16081382

Sample Identification GRPCE-22-IA 2) Date Sampled: 8/19/2016

Sample identification Green E-22-1A

Lab Number: 003A Date Received: 8/19/2016

Sample Type: Air, Can Analysis Date: 8/21/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -2.43 psig
Final Pressure: -2.43 psig

Canister ID: 14534

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 0.16 ND 0 0061 0.04 ND
127-18-4	Tetrachloroethene	0.81 0.036 0.27 0.12 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	0.20 5+ 0.019 0.16 0.050 5+0.0049 0.04 1
79-01-6	Trichloroethene	-0.054 0.021 0.2140,010 0.0039 0.044 1 2
75-01-4	Vinyl Chloride	ND 0.022 0.10 U ND 0.088 (0.04 U)1



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated \boldsymbol{r}

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 22-Aug-16

Client: TETRA TECH

Final Pressure:

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16081382

Sample Identification GRPCE-23-IA-1) Date Sampled: 8/19/2016

Sample Identification GRI CE-23-1A

-2.1 psig

Lab Number: 001A Date Received: 8/19/2016

Sample Type: Air, Can Analysis Date: 8/21/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -2.1 psig

Canister ID: 14464

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	0.040 0.024 0.16 0.0061 0.04 Um
127-18-4	Tetrachloroethene	0.54 J+ 0 036 0.27 0.080 J+0,0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	0.20 3 + 0.019 0.16 0.050 3 + 0.0049 0.04 1
79-01-6	Trichlorocthene	-0.11 0.021 0.21 U.0.020 0.0039 0.04U 1
75-01-4	Vinyl Chloride	NE 0.022 0.10 U NE 0.0088 0.04 U 1



^{-,} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 22-Aug-16

Client: **TETRA TECH**

Final Pressure:

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16081382

Sample Identification GRPCE-23-IA 1)-DP Date Sampled: 8/19/2016

Lab Number: 002A Date Received: 8/19/2016 Sample Type: Air, Can Analysis Date: 8/21/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -2.61 psig

-2.61 psig Canister ID: 14071

MDL RL Results MDL Results RL CAS# (ug/m³) (ug/m3) (ug/m3) (ppbV) (ppbV) (ppbV) Analyte DF Qual cis-1,2-Dichloroethene 0.16 ND 0 0061 156-59-2 ND 0.024 0.04 0.27 0.080 J+0.0053 127-18-4 Tetrachloroethene 0.54 1 0.036 0.04 trans-1,2-Dichloroethene 0.019 0.16 110.0 156-60-5 0.12 0.0049 0.04 LL 0.21 **0.10** N 79-01-6 Trichloroethene 0.054 0.021 0.0039 0.04 0.04 Vinyl Chloride 0.022 ND 0.0088 75-01-4



^{-;} Information not available or not applicable.

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 22-Aug-16

Date Received: 8/19/2016

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16081382

Sample Identification GRPCE-26-OA-

Lab Number: 008A

Sample Type: Air, Can Analysis Date: 8/21/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -2.16 psig
Final Pressure: -2.16 psig

Canister ID: 13966

	300000000000000000000000000000000000000	Results MDL RL Results MDL RL
CAS#	Analyte	(ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0 024 0.16 UJ ND 0.0061 0.04 UJ
127-18-4	Tetrachloroethene	0 27 1+ 0 036 0 27 0.040 1+0 0053 1+0 04 1
156-60-5	trans-1,2-Dichloroethene	0.079 0.019 0.016 0.020 0.0049 0.04 7
79-01-6	Trichloroethene	0.054 0.021 0.21 0.010 0.0039 0.04 W1 8
75-01-4	Vinyl Chloride	ND 0.022 0.10 ND 0.0088 0.04 1



J: Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve

Site Name	Grand Rapids VI ER	TDD No.	S05-0001-1605-010			
Document Tracking No.	1063B	TDD NO.	303-0001-1003-010			
Data Reviewer (signature and date)	Jeoaca A. Vickero September 8, 2016	Technical Reviewer (signature and date)	Hang N. Ellis III 9 September 2016			
Laboratory Report No.	16081524	Laboratory Bureau Veritas/Novi, MI				
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15				
Samples and Matrix	Seven air samples					
Field Duplicate Pairs	None					
Field Blanks	None					

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrum	nent	Performance Checks:				
With		Exceedance/Notes				
Criter	ria	Exceedance/Notes				
Υ						
Initial C	Initial Calibration:					

Initial Calibration:

Within Criteria	Exceedance/Notes
Υ	

Continuing Calibration:

Within Criteria	Exceedance/Notes
Υ	

Calibration Verification:

Within Criteria	Exceedance/Notes
NA	

Method blanks:

Within Criteria	Exceedance/Notes
Υ	

Field blanks:

Within Criteria	Exceedance/Notes
NA	



Interference Check Sam	iples (ICS)) (ICP	metals	only):
------------------------	-------------	--------	--------	--------

Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

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
NA	
LCSs/LCSDs:	
Within Criteria	Exceedance/Notes
Υ	
Sample dilution	ns:
Within Criteria	Exceedance/Notes
NA	
Re-extraction a	nd reanalysis:
Within Criteria	Exceedance/Notes
NA	
Second column	confirmation (GC and HPLC analyses only):
Within Criteria	Exceedance/Notes
NA	
Internal Standa	ırds:
Within Criteria	Exceedance/Notes



Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes The laboratory qualified results between the reporting limit and method detection limit as estimated (1)
Υ	The laboratory qualified results between the reporting limit and method detection limit as estimated (J).

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

Other labe	
Within	Even adams / Nintes
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:

1	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.
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.





Client: TETRA TECH Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16081524 Sample Identification GRPCE-23-IA-Date Sampled: 8/23/2016 BASEMENT) Lab Number: 006A Date Received: 8/23/2016

Sample Type: Air, Can

Test Method: EPA Method TO-15A

Initial Pressure: -1.89 psig Final Pressure: -1.89 psig Canister ID: 14629

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF (Qual
156-59-2	cis-1,2-Dichlorocthene	ND 0.024 (0.16 W ND 0 006) (0.04 W)1	
127-18-4	Tetrachloroethene	0.95 0.036 0.27 0 14 0.0053 0.04 1	
156-60-5	trans-1,2-Dichloroethene	12 0.019 0.16 3.1 0.0049 0.04 1	
79-01-6	Trichlorocthene	0 054 7 0 021 0.21 0.010 7 0.0039 0.04 1	1
75-01-4	Vinyl Chloride	ND 0 022 (0.10 L) ND 0 0088 (0.04 L) 1	



Date: 24-Aug-16

Analysis Date: 8/23/2016

Analyst: DRS

^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL: Report Limit

J; Value is between the MDL and Reporting Limit, estimated r T; Tentatively Identified Compound (TIC)

MDL, Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

E; Value exceeds linear range of calibration curve



Date: 24-Aug-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16081524

Sample Identification GRPCE-23-IA-

MAIN) Date Sampled: 8/23/2016

Lab Number:

Date Gampiear Bizzizore

Sample Type:

005A

Date Received: 8/23/2016

Test Method:

Air, Can

Analysis Date: 8/23/2016

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-2.39 psig

Final Pressure: Canister ID: -2.39 psig

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF (Qual
156-59-2	cis-1,2-Dichloroethene	NO 0.024 (0164) NO 00061 (0.044) 1	
127-18-4	Tetrachloroethcne	0.88 0.036 0.27 0.13 0.0053 0.04 1	
156-60-5	trans-1,2-Dichloroethene	8.5 0.019 0.16 2.1 0.0049 0.04 1	
79-01-6	Trichloroethene	0.11 0.021 0.21 0.020 0.0039 0.04 1	1
75-01-4	Vinyl Chloride	NB 0.022 070 NB 0.088 0.04 L)	



ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E, Value exceeds linear range of calibration curve

^{-;} Information not available or not applicable.



Date: 24-Aug-16

Date Sampled: 8/23/2016

Date Received: 8/23/2016

Analysis Date: 8/23/2016

Analyst: DRS

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16081524

Sample Identification GRPCE-23-IA-

Lab Number: 004A

00474

Sample Type:

Air, Can

Test Method:

EPA Method TO-15A

Initial Pressure:

-1.80 psig

Final Pressure: Canister ID:

13968

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m ³) (ug/m ³) (ug/m ³) (ppbV) (ppbV) (ppbV) DF Qua
156-59-2	cis-1,2-Dichloroethene	NB 0.024 (0.16 L) NB 0.0061 (0.04 L) 1
127-18-4	Tetrachloroethene	1.1 0.036 0.27 0.16 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	11 0.019 0.16 2.9 0.0049 0.04 1
79-01-6	Trichloroethene	0.054 3 0.021 0.21 0.010 3 0.0039 0.04 1
75-01-4	Vinyl Chloride	ND 0.022 (0.10 L) ND 0.0088 (0.04 L)



^{--;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J: Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



trans-1,2-Dichloroethene

Trichloroethene

Vinyl Chloride

Date: 24-Aug-16

Client:	TETRA TECH								
Project:	GRAND RAPIDS EMERGENCY RESPONSE		7	Work Or	der No:	16081524			
Sample Identifica	ation GRPCE-23-IA-1168(MAIN)				Date Sa	mpled:	8/23/201	6	
Lab Number:	003A				Date Re	ceived:	8/23/201	6	
Sample Type:	Air, Can				Analys	is Date:	8/23/201	6	
Test Method:	EPA Method TO-15A				A	nalyst:	DRS		
Initial Pressure:	-1.82 psig								
Final Pressure:	-1.82 psig								
Canister ID:	14004								
CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
	s-1,2-Dichloroethene trachloroethene	1.0	0.024		(0.15	0.0061	0.04	1	



8800.0 CIM

0.0049

0.010 3 0 0039

0.04

0.04

(0.04 L

156-60-5

79-01-6

75-01-4

--; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r T; Tentatively Identified Compound (TIC)

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

0.019

0.021

0.022

(0.10 LL)

0.054 T

E; Value exceeds linear range of calibration curve



Date: 24-Aug-16

Date Received: 8/23/2016

Analysis Date: 8/23/2016

Analyst: DRS

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16081524

Sample Identification GRPCE-24-IA-1170(1) Date Sampled: 8/23/2016

Lab Number: 001A

Sample Type: Air, Can

Test Method: EPA Method TO-15A

Initial Pressure: -2.36 psig Final Pressure: -2.36 psig

Canister ID:

14160

CAS#	Analyte		MDL ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	(0.040 J	0.024	0.16	0.0163	00061	0.04	1	*
127-18-4	Tetrachlorocthene	0.47	0.036	0.27	0.070	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	0.12 3	0.019	0.16	0.030 3	0.0049	0.04	1	y
79-01-6	Trichloroethene	0.054 丁	0.021	0.21	0.010 3	0.0039	0.04	1	1
75-01-4	Vinyl Chloride	ND	0.022	0.10	HD MD	0 0088	0.04 L	DI	



-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r T; Tentatively Identified Compound (TIC)

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

E; Value exceeds linear range of calibration curve



Vinyl Chloride

Date: 24-Aug-16

Client:		TETRA TECH	
Project:		GRAND RAPIDS EMERGENCY RES	SPONSE Work Order No: 16081524
Sample Ide	ntificati	on GRPCE-24-IA 2)	Date Sampled: 8/23/2016
Lab Numbe	er:	002A	Date Received: 8/23/2016
Sample Typ	pe:	Air, Can	Analysis Date: 8/23/2016
Test Method:		EPA Method TO-15A	Analyst: DRS
Initial Pres	ssure:	-1.56 psig	
Final Press	ure:	-1.56 psig	
Canister II);	14127	
CAS#		Analyte	Results MDL RL Results MDL RL (ug/m²) (ug/m²) (ug/m²) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,	2-Dichloroethene	NB 0.024 (0.164) ND 0.0061 (0.044)
127-18-4	Tetra	chloroethene	0.41 0.036 0.27 0.060 0.0053 0.04 1
156-60-5	trans-	-1,2-Dichloroethene	0.20 0.019 0.16 0.050 0.0049 0.04 1
79-01-6	Trich	loroethene	0.054 3 0.021 0.21 0.010 3 0.0039 0.04 1



75-01-4

(0.10 LL

^{-,} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r T; Tentatively Identified Compound (TIC)

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

E; Value exceeds linear range of calibration curve



Date: 24-Aug-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16081524

Sample Identification GRPCE-27-0A-

007A

Date Sampled: 8/23/2016

Lab Number: Sample Type:

Air, Can

Date Received: 8/23/2016

Test Method:

EPA Method TO-15A

Analysis Date: 8/24/2016 Analyst: DRS

Initial Pressure:

-1.79 psig

Final Pressure:

-1.79 psig

Canister 1D:

14150

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF (Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 (0.16 W ND 0 0061 (0.04 W)	
127-18-4	Tetrachloroethene	0.47 0.036 0.27 0.070 0.0053 0.04 1	
156-60-5	trans-1,2-Dichloroethene	0.040 J 0.019 0.16 0.010 J 0.049 0.04 I	1
79-01-6	Trichloroethene	0.054 3 0.021 0.21 0.010 3 00039 0.04 1	V
75-01-4	Vinyl Chloride	NHD 0.022 0.10 W MD 0 0088 0.04 W 1	



ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve

^{-;} Information not available or not applicable.

Site Name	Grand Rapids VI ER		TDD No.	S05-0001-1605-010
Document Tracking No.	1063C		IDD NO.	303-0001-1603-010
Data Reviewer (signature and date)	Jesaca A. Vickero September 8, 2016		Technical Reviewer (signature and date)	9 September 2016
Laboratory Report No.	16081927		Laboratory	Bureau Veritas/Novi, MI
Analyses	Volatile organic compounds (VOCs) by EPA	M	ethod TO-15	
Samples and Matrix	Eight air samples (including a field duplicat	e)		
Field Duplicate Pairs	GRPCE-24-IA-BASEMENT)/GRPCE	-24	I-IA-BASEMEN	T)-DP
Field Blanks	None			

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection of results was required for this data set. The data is usable as qualified based on the findings of this validation effort.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrument Performance Checks:

nstrument Performance Checks:	
Within Criteria	Exceedance/Notes
Y	
nitial Calibration:	
Within Criteria	Exceedance/Notes
Υ	
· I	
Continuing Calibration: Within	Exceedance/Notes
Continuing Calibration:	Exceedance/Notes
Continuing Calibration: Within Criteria	Exceedance/Notes
Continuing Calibration: Within Criteria	Exceedance/Notes
Continuing Calibration: Within Criteria	Exceedance/Notes Exceedance/Notes

Method blanks:

Within Criteria	Exceedance/Notes
N	Tetrachloroethene and cis-1,2-dichloroethene were detected in the method blank below the reporting limit (RL). The cis-1,2-dichloroethene results for GRPCE-24-IA- BASEMENT), GRPCE-24-IA- BASEMENT)-DP, GRPCE-24-IA- BASEMENT) and GRPCE-25-IA- 1) were below the RL and were therefore raised to the RL and qualified as non-detect (U). The tetrachloroethene results for GRPCE-25-IA- 1), GRPCE-25-IA- 2), and GRPCE-28-OA- were above the RL but less than ten times the blank concentration and were therefore qualified as estimated with a possible high bias (J+). No qualifications were applied for results greater than ten times the blank concentrations.



	EIA REGION S START CONTRACT
Field blank	s:
Within Criteria	Exceedance/Notes
NA	
Interferenc	te Check Samples (ICS) (ICP metals only):
Within Criteria	Exceedance/Notes
NA	
	nitoring compounds (surrogates and labeled compounds):
Within Criteria	Exceedance/Notes
Y	
'	
MS/MSD:	
Within Criteria	Exceedance/Notes
NA	
Post digest	ion spikes:
Within	Exceedance/Notes
Criteria	
NA	
Serial diluti	ions:
Within Criteria	Exceedance/Notes



NA

Laboratory duplicate	es:
Within	Even dames /Netes
Criteria	Exceedance/Notes
NA	
Field duplicates:	
Within	Exceedance/Notes
Criteria	Exacedance, Notes
Υ	
LCSs/LCSDs:	
Within	
Criteria	Exceedance/Notes
Y	
Sample dilutions:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
NA	
B	
Re-extraction and re	analysis: ———————————————————————————————————
Within	Exceedance/Notes
Criteria	
NA	
Second column conf	irmation (GC and HPLC analyses only):
Within	
Cuitania	Exceedance/Notes



Criteria NA

Internal Standards:

Within Criteria	Exceedance/Notes
Υ	

Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	The laboratory qualified results between the reporting limit and method detection limit as estimated (J).

Tentatively identified compounds:

	,
Within	Even dance / Notes
Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Y	

Other [specify]:

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:

1	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.
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.





Date: 30-Aug-16

Client:	TETRA TECH	
Project:	GRAND RAPIDS EMERGENCY RESPONSE	Work Order No: 16081927
Sample Iden	tification GRPCE-24-IA-	Date Sampled: 8/28/2016
Lab Numbe	r: 006A	Date Received: 8/29/2016
Sample Typ	e: Air, Can	Analysis Date: 8/29/2016
Test Method	d: EPA Method TO-15A	Analyst: DRS
Initial Press	sure: -2.34 psig	
Final Pressi	ure: -2.34 psig	
Canister ID	: 14157	
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m²) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	8.040 0.024 0.16U 0.010 0.0061 0.04U
127-18-4	Tetrachloroethene	2.2 0.036 0.27 0.32 0.0053 0.04 1
156-60-5	trans-1.2-Dichloroethene	66 0.019 0.16 17 0.0049 0.04 1
79-01-6	Trichloroethene	0.21 0.021 0.21 0.040 0.0039 0.04 1
75-01-4	Vinyl Chloride	ND 0.022 0.104 ND 0 0088 0.044 1



^{--:} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r T; Tentatively Identified Compound (TIC)

MDL; Method Detection Limit

B; Analyte detected in the associated Mcthod Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

E; Value exceeds linear range of calibration curve



Date: 30-Aug-16

Client:		TETRA TECH								
Project:		GRAND RAPIDS EMERGENCY RESPONSE			Work Order No			der No:	16081927	
Sample Ide	ntificati	on GRPCE-24-IA-	BASEMENT)-DP				Date Sa	mpled:	8/28/2016	
Lab Numbe	r:	007A					Date Re	ceived:	8/29/2016	
Sample Typ	e:	Air, Can					Analysi	s Date:	8/29/2016	
Test Metho	d:	EPA Method TO-15.	A				A	nalyst:	DRS	
Initial Pres	sure:	-2.05 psig								
Final Press	ure:	-2.05 psig								
Canister ID:		14126								
CAS#		Ana	ilyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV) 1	F Qual
156-59-2	cis-1,	2-Dichloroethene		0.040	0.024	0.16	40,010	0.0061	0.044	1 1
127-18-4	Tetra	chloroethene		2.1	0.036	0.27	0.31	0.0053	0.04	1
156-60-5	trans-	-1,2-Dichloroethene		64	0.019	0.16	16	0.0049	0.04	1
79-01-6	Trich	loroethene		0.21	0.021	0.21	0.040	0.0039	0.04	1
75-01-4	Viny	Chloride		NID	0.022	(0.10	LL) NE	0 0088	0.044)1



ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r T; Tentatively Identified Compound (TIC)

MDL; Method Detection Limit

^{-,} Information not available or not applicable.

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

E; Value exceeds linear range of calibration curve



Date: 30-Aug-16 Client: TETRA TECH Project: **GRAND RAPIDS EMERGENCY RESPONSE** Work Order No: 16081927 Sample Identification GRPCE-24-IA-Date Sampled: 8/28/2016 MAIN) Lab Number: 005A Date Received: 8/29/2016 Air, Can Analysis Date: 8/29/2016 Sample Type: EPA Method TO-15A Analyst: DRS Test Method: Initial Pressure: -1.65 psig Final Pressure: -1.65 psig Canister ID: 14541 Results MDL Results MDL (ug/m3) (ug/m3) (ug/m3) (pphV) (ppbV) (ppbV) DF Qual CAS# Analyte 0.024 (0.16 U) 0.0061 (0.044)1 cis-1,2-Dichloroethene 156-59-2 0.0053 0.04 0.81 0.036 0.27 0.12 127-18-4 Tetrachlorocthene 1.2 0.019 0.16 0.0049 0.04 156-60-5 trans-1,2-Dichloroethene 4.7 0.0305 0.021 0 0039 0.16 3 0.21 0 04 79-01-6 Trichloroethene Vinyl Chloride 0.022 0.104 ND 0 0088 0 04 75-01-4



General Notes and Qualifiers:

-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r T; Tentatively Identified Compound (TIC)

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

E; Value exceeds linear range of calibration curve



Client: TETRA TECH GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16081927 Project: Sample Identification GRPCE-24-IA-1 (BASEMENT) Date Sampled: 8/28/2016 Lab Number: 004A Date Received: 8/29/2016 Sample Type: Air, Can Analysis Date: 8/29/2016 EPA Method TO-15A Analyst: DRS Test Method: Initial Pressure: -2.21 psig Final Pressure: -2.21 psig 14032 Canister ID: MDL Results MDL RI. Results RL (ug/m3) (ug/m3) (ug/m³) (ppbV) (ppbV) (ppbV) DF CAS# Analyte Qual 0.0061 0.04 4 156-59-2 cis-1,2-Dichloroethene 0.040 0.024 0.16U@010 0.0053 0.04 5.3 0.036 0.27 0.78 127-18-4 Tetrachloroethene 0.0049 0.04 0.019 0.16 21 trans-1,2-Dichloroethene 82 156-60-5 0.04 0.16 J 0.021 0.030 30.0039 0.21 79-01-6 Trichloroethene 0.022 0.10 L ND 0 0088 0.04 4 Vinyl Chloride 75-01-4



Date: 30-Aug-16

^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T: Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16081927

Sample Identification GRPCE-24-IA-

Lab Number:

003A

Sample Type:

Air, Can

Test Method:

EPA Method TO-15A

Initial Pressure: Final Pressure:

-1.61 psig

-1.61 psig

Canister ID:	14338	
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 (0.164) ND 0.0061 (0.044)
127-18-4	Tetrachloroethene	4.2 0.036 0.27 0.62 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	71 0.019 0.16 18 0.0049 0.04 1
79-01-6	Trichloroethene	0.11 3 0.021 0.21 0.020 3 0 0039 0.04 1
75-01-4	Vinyl Chloride	NO 0.022 0104 NO 00088 004401



Date: 30-Aug-16

Date Sampled: 8/28/2016

Date Received: 8/29/2016

Analysis Date: 8/29/2016

Analyst: DRS

^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL: Report Limit

J; Value is between the MDL and Reporting Limit, estimated r T; Tentatively Identified Compound (TIC)

MDL; Method Detection Limit

B, Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

E; Value exceeds linear range of calibration curve



TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE

Sample Identification GRPCE-25-IA

001A Lab Number:

Sample Type:

Air, Can

Test Method:

Canister ID:

Client:

EPA Method TO-15A

Initial Pressure: Final Pressure:

-2.43 psig -2.43 psig

13998

	Work Ord	ler No:	1608192	7	
Date Sampled:			8/28/201	6	
	Date Re	8/29/2016			
	Analysi	is Date:	8/29/2016		
	Analyst:		DRS		
RL g/m³)	Results (ppbV)			DF	Qual
0.1	6 Labra	0.0061	(D.04 L	5	y

Date: 30-Aug-16

CAS#	Analyte	(ug/m³) (ug/m³) (ug/m³) (pphV) (ppbV) DF Qua
156-59-2	cis-1,2-Dichloroethene	0.010 0.024 0.16 Upor 0.0061 0.04 W
127-18-4	Tetrachlorocthene	0.54 1 0.036 0.27 (0.080 1 0.053 0.04 1
156-60-5	trans-1,2-Dichloroethene	0.71 0.019 0.16 0.18 0.0049 0.04 1
79-01-6	Trichloroethene	0.11 5 0.021 0.21 0.020 5 0.0039 0.04 1
75-01-4	Vinyl Chloride	NO 0.022 0.10 U NO 0.0088 0.04 U 1



ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r T; Tentatively Identified Compound (TIC)

MDL; Method Detection Limit

^{-;} Information not available or not applicable.

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

E; Value exceeds linear range of calibration curve



-1.84 psig

Final Pressure:

Client: TETRA TECH Work Order No: 16081927 Project: GRAND RAPIDS EMERGENCY RESPONSE Sample Identification GRPCE-25-IA-Date Sampled: 8/28/2016 002A Date Received: 8/29/2016 Lab Number: Sample Type: Air, Can Analysis Date: 8/29/2016 EPA Method TO-15A Test Method: Analyst: DRS Initial Pressure: -1.84 psig

Canister ID: 14010 Results MDL RL Results MDL (ppbV) DF Qual CAS# (ug/m3) (ug/m3) (ug/m3) (ppbV) (ppbV) Analyte 0.0061 (0.16U) 0044)1 0 024 156-59-2 cis-1,2-Dichloroethene 036 0.060 3+0.0053 0.04 0.41 3+ 0.27 127-18-4 Tetrachloroethene 0.019 0.16 0.070 0,0049 0.04 0.28 156-60-5 trans-1,2-Dichloroethene 0.010 30.0039 0.054 3 0.021 0.21 0.04 79-01-6 Trichlorocthene 0.10U NO 0 0088 Vinyl Chloride AH 0.022 0.0441 75-01-4



Date: 30-Aug-16

B, Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r T; Tentatively Identified Compound (TIC) MDL; Method Detection Limit

R; RPD outside accepted recovery limits

E; Value exceeds linear range of calibration curve



Date: 30-Aug-16

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16081927

Sample Identification GRPCE-28-OA

008A

Date Sampled: 8/28/2016

Lab Number: Sample Type:

Air, Can

Date Received: 8/29/2016

Test Method:

EPA Method TO-15A

Analysis Date: 8/29/2016 Analyst: DRS

Initial Pressure:

-2.6 psig

Final Pressure:

-2.6 psig

Canister ID:

13927

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qua
156-59-2	cis-1,2-Dichloroethene	NB 0.024 (0.164) NB 0.0061 (0.044) 1
127-18-4	Tetrachloroethene	0.41 3+ 0.036 0.27 0.060 3+ 0.053 0.04 1
156-60-5	trans-1,2-Dichloroethene	0.040 3 0.019 0.16 0.010 3 00049 0.04 1 3
79-01-6	Trichloroethene	0.054 J 0.021 0.21 0.030 J 00039 0.04 1
75-01-4	Vinyl Chloride	MB 0.022 (0.10) MB 0.0088 (0.04 U)



General Notes and Qualifiers:

-, Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r T; Tentatively Identified Compound (TIC)

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

E; Value exceeds linear range of calibration curve

Site Name	Grand Rapids VI ER	TDD No.	SOF 0001 160F 010			
Document Tracking No.	1063D	I DD NO.	S05-0001-1605-010			
Data Reviewer (signature and date)	Jeoaca A. Vickero September 8, 2016	Technical Reviewer (signature and date)	Hang N. Elis III 9 September 2016			
Laboratory Report No.	Laboratory Report No. 16090184		Bureau Veritas/Novi, MI			
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15				
Samples and Matrix	Seven air samples					
Field Duplicate Pairs	None					
Field Blanks	None					

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection of results was required for this data set. The data is usable as qualified based on the findings of this validation effort.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrument Performance Checks:

Vithin riteria	Exceedance/Notes
Υ	

Initial Calibration:

Within Criteria	Exceedance/Notes
Υ	

Continuing Calibration:

Within Criteria	Exceedance/Notes
Υ	

Calibration Verification:

Within Criteria	Exceedance/Notes
NA	



Method blanks:

Within Criteria	Exceedance/Notes		
	All VOCs except vinyl chloride were detected in the method blank below the reporting limit (RL). Results below the RL were raised to the RL and qualified as non-detect (U). Results above the RL but less than ten times the blank concentration were qualified as estimated with a possible high bias (J+). No qualifications were applied for results greater than ten times the blank concentrations. The following qualifications were applied:		
N	Flag "J+": Tetrachloroethene for GRPCE-26-IA-11 and GRPCE-29-OA-11 trans-1,2-Dichloroethene for GRPCE-26-IA-12 2)		
	Raise to RL and flag "U": cis-1,2-Dichloroethene and trichloroethene for GRPCE-25-IA- GRPCE-25-IA- GRPCE-25-IA- GRPCE-26-IA- Cis-1,2-Dichloroethene, trans-1,2-dichloroethene, and trichloroethene for GRPCE-26-IA- Trans-1,2-Dichloroethene and trichloroethene for GRPCE-29-OA-		

Field blanks:

Within Criteria	Exceedance/Notes
NA	

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

Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	



MS/MSD:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
NA	
Post digestion spikes:	
Within	
Criteria	Exceedance/Notes
NA	
Serial dilutions:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
NA	
Laboratory duplicates:	
Within	Fire a deman / Mater
Criteria	Exceedance/Notes
NA	
,	
Field duplicates:	
Within	Even adams of Nicks
Criteria	Exceedance/Notes
NA	
LCSs/LCSDs:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
V	



Within	Exceedance/Notes
Criteria	Exceedance/Notes
NA	
Re-extraction and reanalysis:	
Within	
Criteria	Exceedance/Notes
NA	
Second column confirmation (GC and	HPI C analyses only):
Within	
Criteria	Exceedance/Notes
NA	
nternal Standards:	
Within	E day /No
Criteria	Exceedance/Notes
Υ	
Farget analyte identification:	
Within	
	Exceedance/Notes
Criteria	

Exceedance/Notes



Within

Criteria Y

Tentatively identified compounds:

	thin teria	Exceedance/Notes
N	NΑ	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

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.					





Date: 06-Sep-16

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16090184

Sample Identification GRPCE-25-IA

(BASEMENT)

Date Sampled: 8/31/2016

Lab Number:

006A

Sample Type:

Date Received: 9/2/2016

Air, Can

Analysis Date: 9/3/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-1.77 psig

Final Pressure:

-1.77 psig

Canister ID:

14400

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	0.040*	0.024	0.16	0.010	0.0061	0.044	1	y
127-18-4	Tetrachloroethene	1.4	0.036	0.27	0.21	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	(17)	0.019	0.16	4.3	0.0049	0.04	1	
79-01-6	Trichloroethene	0.054	0.021	0.21	10,010	0.0039	0.044	1	8
75-01-4	Vinyl Chloride	ND	0.022	0.10	u) NI	0.0088	0.044	1	



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 06-Sep-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16090184

Sample Identification GRPCE-25-IA

(MAIN)

Date Sampled: 8/31/2016

Lab Number:

005A

Date Received: 9/2/2016

Sample Type:

Air, Can

Analysis Date: 9/3/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-2.12 psig

Final Pressure:

-2.12 psig

Canister ID:

14142

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RI. (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	-0.040	0.024	0.16	40.010	0.0061	(0.04 LL)ı	8
127-18-4	Tetrachloroethene	1.1	0.036	0.27	0.16	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	7.5	0.019	0.16	(1.9)	0.0049	0.04	1	
79-01-6	Trichloroethene	0.11	0.021	0.21	10.020	0.0039	0.044	11	*
75-01-4	Vinyl Chloride	Q I4	0.022	0.10	U AND	0 0088	0.044	1	



^{--:} Information not available or not applicable.

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 06-Sep-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16090184

Sample Identification GRPCE-25-IA- (BASEMENT) Date Sampled: 8/31/2016

bample identification old CE-25-1A-

Lab Number: 004A Date Received: 9/2/2016

Sample Type: Air, Can Analysis Date: 9/2/2016
Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -1.28 psig
Final Pressure: -1.28 psig

Canister ID: 13992

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL. (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	0.010	0.024	0.16	40.010	0.0061	(0.04U	01	y
127-18-4	Tetrachloroethene	1.6	0.036	0.27	0.24	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	13	0.019	0.16	3.4	0.0049	0.04	1	
79-01-6	Trichloroethene	-0.054	0.021	0.21	14.010	0.0039	0.044	1	V
75-01-4	Vinyl Chloride	ND.	0.022	0.10	U) NB	0 0088	0.044	11	



^{-.} Information not available or not applicable.

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Sample Identification GRPCE-25-IA-

Date: 06-Sep-16

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16090184

Lab Number:

003A

Date Sampled: 8/31/2016

Sample Type:

Air, Can

Date Received: 9/2/2016

Test Method:

EPA Method TO-15A

Analysis Date: 9/2/2016 Analyst: DRS

Initial Pressure:

-1.72 psig

Final Pressure:

-1.72 psig

Canister ID.

14153

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	9.049	0.024	0.16	u 0.010	0.0061	(0.044)1	8
127-18-4	Tetrachlorocthene	1.5	0.036	0.27	0.22	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	14	0.019	0.16	3.6	0.0049	0.04	1	
79-01-6	Trichlorocthene	0.054	0.021	0.21	U A010	0.0039	(0.04L	1	8
75-01-4	Vinyl Chloride	Q14	0.022	0.10	u) NH	0.0088	0.044	1	



RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

^{-;} Information not available or not applicable.

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 06-Sep-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16090184

Sample Identification GRPCE-26-IA-1)

Date Sampled: 8/31/2016

001A Lab Number: Date Received: 9/2/2016

Sample Type: Air, Can Analysis Date: 9/2/2016

Test Method: EPA Method TO-15A Analyst: DRS Initial Pressure: -2.19 psig

Final Pressure: -2.19 psig Canister ID: 13991

	TO THE		MDL	RL	Results	MDL	RL		
CAS#	Analyte	(ug/m³) (ug/m³)	(ug/m³)	(ppbV)	(ppbV)	(ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	0.079	0.024	0.16	10.020	0.0061	(0.04 L	Di	1
127-18-4	Tetrachloroethene	(0.41 3 +	0.036	0.27	0.060 3	10.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	0.079	0.019	0.164	19:020	0.0049	0.04L	1/1	8
79-01-6	Trichloroethene	0.11	0.021	0.21	1.020	0.0039	0.04	1	8
75-01-4	Vinyl Chloride	NB	0.022	0.10	NE	0 0088	0.04	1	



^{--:} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 06-Sep-16

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16090184

Sample Identification GRPCE-26-IA-2)

Date Sampled: 8/31/2016

Lab Number:

002A

Date Received: 9/2/2016

Sample Type:

Air, Can

Analysis Date: 9/2/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-1.72 psig

Final Pressure:

-1.72 psig

Canister ID:

14293

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Q	Qua
156-59-2	cis-1,2-Dichloroethene	0.040 0.024 (0.1644.010 0.0061 (0.044) I	8
127-18-4	Tetrachloroethene	1.1 0.036 0.27 0.16 0.0053 0.04 1	
156-60-5	trans-1,2-Dichloroethene	0.16 3 + 0.019 0.16 0.040 3 + 0.049 0.04 1	
79-01-6	Trichloroethene	0.054 0.021 0.214 0.010 0.0039 0.04 4 1	y
75-01-4	Vinyl Chloride	ND 0.022 0.104 ND 0.0088 0.0441	



^{--;} Information not available or not applicable.

ND: Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 06-Sep-16

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16090184

Date Sampled: 8/31/2016

Date Received: 9/2/2016

Analysis Date: 9/3/2016

Analyst: DRS

Sample Identification GRPCE-29-OA-

Lab Number:

007A

Sample Type:

Air, Can

Test Method:

EPA Method TO-15A

Initial Pressure:

psig

Final Pressure:

-1.76 psig

Canister ID:

14466

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) I	F Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 (0.164) ND 0 0061 (0.044)	1
127-18-4	Tetrachloroethene	0.27 J+ 0.036 0.27 0.040 J+0.0053 0.04	1
156-60-5	trans-1,2-Dichloroethene	0.040 0.019 0.16 (10)010 0.0049 0.04 (1)	1 1
79-01-6	Trichloroethene	0.054 0.021 0.21 0.010 0.0039 0.04	1 1
75-01-4	Vinyl Chloride	₩D 0.022 0.10 ₩D 0.0088 0.04 V	1



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve

Site Name	Grand Rapids VI ER	TDD No	505 0001 1505 010
Document Tracking No.	1063E	TDD No.	S05-0001-1605-010
Data Reviewer (signature and date)	Jeoaca A. Vickers September 8, 2016	Technical Reviewer (signature and date)	Hang N. Elis III 9 September 2016
Laboratory Report No.	1609003	Laboratory	Eurofins-Air Toxics/Folsom, CA
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15	
Samples and Matrix	Seven air samples		
Field Duplicate Pairs	None		
Field Blanks	None		

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrument Performance Checks:	
Within	
Criteria	Exceedance/Notes
Υ	
,	
Initial Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Y	
Continuing Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/Notes
Y	
Calibration Verification:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Y	
Method blanks:	
Within	Evenedones /Notes
Criteria	Exceedance/Notes
Υ	

Field blanks:

Vithin riteria	Exceedance/Notes
NA	



Interference Check Sam	iples (ICS)) (ICP	metals	only):
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Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

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
NA	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Υ	

Sample dilutions:

Within Criteria	Exceedance/Notes				
	1.50x: GRPCE-03-IA-	2 nd Floor-N)	1.73x: GRPCE-04-IA-	Basement-S)	
V	1.51x: GRPCE-03-IA-	SFR)	1.74x: GRPCE-03-IA-	Main-Common)	
Y	1.57x: GRPCE-03-IA-	2 nd Floor-W)	1.82x: GRPCE-04-IA-	Basement-W)	
	1.72x: GRPCE-04-IA-	Basement-N)			

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
Υ	

Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	Results between the method detection limit and the reporting limit with qualified as estimated (J) by the laboratory.

Tentatively identified compounds:

	,
Within	Evenedance/Notes
Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within	Exceedance/Notes
Criteria	
Υ	

Other [specify]:

Other [specify].							
	Within	Evenedones /Netes					
	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:

1	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.
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.



CLIENTSAMPID		COMPOUND NAME	RESULTS	DATAFLAGS	MDL	REPLMT	UNITS	VALRESULTS	VALFLAGS
GRPCE-03-IA-	(2nd Floor-N)	Vinyl Chloride		ND	0.039	0.15	PPBV	0.15	U
GRPCE-03-IA-	(2nd Floor-N)	trans-1,2-Dichloroethene		ND	0.035	0.15	PPBV	0.15	U
GRPCE-03-IA-	(2nd Floor-N)	cis-1,2-Dichloroethene		ND	0.049	0.15	PPBV	0.15	U
GRPCE-03-IA-	(2nd Floor-N)	Trichloroethene		ND	0.050	0.15	PPBV	0.15	U
GRPCE-03-IA-	(2nd Floor-N)	Tetrachloroethene	0.077	J	0.024	0.15	PPBV	0.077	J
GRPCE-03-IA-	(2nd Floor-N)	Vinyl Chloride		ND	0.10	0.38	UG/M3	0.38	U
GRPCE-03-IA-	(2nd Floor-N)	trans-1,2-Dichloroethene		ND	0.14	0.59	UG/M3	0.59	U
GRPCE-03-IA-	(2nd Floor-N)	cis-1,2-Dichloroethene		ND	0.19	0.59	UG/M3	0.59	U
GRPCE-03-IA-	(2nd Floor-N)	Trichloroethene		ND	0.27	0.81	UG/M3	0.81	U
GRPCE-03-IA-	(2nd Floor-N)	Tetrachloroethene	0.52	J	0.16	1.0	UG/M3	0.52	J
GRPCE-03-IA-	(2nd Floor-W)	Vinyl Chloride		ND	0.041	0.16	PPBV	0.16	U
GRPCE-03-IA-	(2nd Floor-W)	trans-1,2-Dichloroethene		ND	0.036	0.16	PPBV	0.16	U
GRPCE-03-IA-	(2nd Floor-W)	cis-1,2-Dichloroethene		ND	0.051	0.16	PPBV	0.16	U
GRPCE-03-IA-	(2nd Floor-W)	Trichloroethene		ND	0.053	0.16	PPBV	0.16	U
GRPCE-03-IA-	(2nd Floor-W)	Tetrachloroethene	0.093	J	0.025	0.16	PPBV	0.093	J
GRPCE-03-IA-	(2nd Floor-W)	Vinyl Chloride		ND	0.10	0.40	UG/M3	0.40	U
GRPCE-03-IA-	(2nd Floor-W)	trans-1,2-Dichloroethene		ND	0.14	0.62	UG/M3	0.62	U
GRPCE-03-IA-	(2nd Floor-W)	cis-1,2-Dichloroethene		ND	0.20	0.62	UG/M3	0.62	U
GRPCE-03-IA-	(2nd Floor-W)	Trichloroethene		ND	0.28	0.84	UG/M3	0.84	U
GRPCE-03-IA-	(2nd Floor-W)	Tetrachloroethene	0.63	J	0.17	1.1	UG/M3	0.63	J
GRPCE-03-IA-	(Main-Common)	Vinyl Chloride		ND	0.046	0.17	PPBV	0.17	U
GRPCE-03-IA-	(Main-Common)	trans-1,2-Dichloroethene		ND	0.040	0.17	PPBV	0.17	U
GRPCE-03-IA-	(Main-Common)	cis-1,2-Dichloroethene		ND	0.057	0.17	PPBV	0.17	U
GRPCE-03-IA-	(Main-Common)	Trichloroethene		ND	0.058	0.17	PPBV	0.17	U
GRPCE-03-IA-	(Main-Common)	Tetrachloroethene	0.16	J	0.028	0.17	PPBV	0.16	J
GRPCE-03-IA-	(Main-Common)	Vinyl Chloride		ND	0.12	0.44	UG/M3	0.44	U
GRPCE-03-IA-	(Main-Common)	trans-1,2-Dichloroethene		ND	0.16	0.69	UG/M3	0.69	U
GRPCE-03-IA-	(Main-Common)	cis-1,2-Dichloroethene		ND	0.22	0.69	UG/M3	0.69	U
GRPCE-03-IA-	(Main-Common)	Trichloroethene		ND	0.31	0.94	UG/M3	0.94	U
GRPCE-03-IA-	(Main-Common)	Tetrachloroethene	1.1	J	0.19	1.2	UG/M3	1.1	J
GRPCE-03-IA-	(SFR)	Vinyl Chloride		ND	0.040	0.15	PPBV	0.15	U
GRPCE-03-IA-	(SFR)	trans-1,2-Dichloroethene		ND	0.035	0.15	PPBV	0.15	U
GRPCE-03-IA-	(SFR)	cis-1,2-Dichloroethene		ND	0.049	0.15	PPBV	0.15	U

CLIENTSAM	IPID	COMPOUND NAME	RESULTS	DATAFLAGS	MDL	REPLMT	UNITS	VALRESULTS	VALFLAGS
GRPCE-03-IA-	(SFR)	Trichloroethene	-	ND	0.051		PPBV	0.15	U
GRPCE-03-IA-	(SFR)	Tetrachloroethene	0.11	J	0.024	0.15	PPBV	0.11	J
GRPCE-03-IA-	(SFR)	Vinyl Chloride		ND	0.10	0.38	UG/M3	0.38	U
GRPCE-03-IA-	(SFR)	trans-1,2-Dichloroethene		ND	0.14	0.60	UG/M3	0.60	U
GRPCE-03-IA-	(SFR)	cis-1,2-Dichloroethene		ND	0.20	0.60	UG/M3	0.60	U
GRPCE-03-IA-	(SFR)	Trichloroethene		ND	0.27	0.81	UG/M3	0.81	U
GRPCE-03-IA-	(SFR)	Tetrachloroethene	0.72	J	0.16	1.0	UG/M3	0.72	J
GRPCE-04-IA-	(Basement-N)	Vinyl Chloride		ND	0.045	0.17	PPBV	0.17	U
GRPCE-04-IA-	(Basement-N)	trans-1,2-Dichloroethene		ND	0.040	0.17	PPBV	0.17	U
GRPCE-04-IA-	(Basement-N)	cis-1,2-Dichloroethene		ND	0.056	0.17	PPBV	0.17	U
GRPCE-04-IA-	(Basement-N)	Trichloroethene		ND	0.058	0.17	PPBV	0.17	U
GRPCE-04-IA-	(Basement-N)	Tetrachloroethene	0.52		0.027	0.17	PPBV	0.52	
GRPCE-04-IA-	(Basement-N)	Vinyl Chloride		ND	0.12	0.44	UG/M3	0.44	U
GRPCE-04-IA-	(Basement-N)	trans-1,2-Dichloroethene		ND	0.16	0.68	UG/M3	0.68	U
GRPCE-04-IA-	(Basement-N)	cis-1,2-Dichloroethene		ND	0.22	0.68	UG/M3	0.68	U
GRPCE-04-IA-	(Basement-N)	Trichloroethene		ND	0.31	0.92	UG/M3	0.92	U
GRPCE-04-IA-	(Basement-N)	Tetrachloroethene	3.6		0.19	1.2	UG/M3	3.6	
GRPCE-03-IA-	(Basement-S)	Vinyl Chloride		ND	0.045	0.17	PPBV	0.17	U
GRPCE-03-IA-	(Basement-S)	trans-1,2-Dichloroethene		ND	0.040	0.17	PPBV	0.17	U
GRPCE-03-IA-	(Basement-S)	cis-1,2-Dichloroethene		ND	0.056	0.17	PPBV	0.17	U
GRPCE-03-IA-	(Basement-S)	Trichloroethene		ND	0.058	0.17	PPBV	0.17	U
GRPCE-03-IA-	(Basement-S)	Tetrachloroethene	0.41		0.028	0.17	PPBV	0.41	
GRPCE-03-IA-	(Basement-S)	Vinyl Chloride		ND	0.12	0.44	UG/M3	0.44	U
GRPCE-03-IA-	(Basement-S)	trans-1,2-Dichloroethene		ND	0.16	0.68	UG/M3	0.68	U
GRPCE-03-IA-	(Basement-S)	cis-1,2-Dichloroethene		ND	0.22	0.68	UG/M3	0.68	U
GRPCE-03-IA-	(Basement-S)	Trichloroethene		ND	0.31	0.93	UG/M3	0.93	U
GRPCE-03-IA-	(Basement-S)	Tetrachloroethene	2.8		0.19	1.2	UG/M3	2.8	
GRPCE-03-IA-	(Basement-W)	Vinyl Chloride		ND	0.048	0.18	PPBV	0.18	U
GRPCE-03-IA-	(Basement-W)	trans-1,2-Dichloroethene		ND	0.042	0.18	PPBV	0.18	U
GRPCE-03-IA-	(Basement-W)	cis-1,2-Dichloroethene		ND	0.059	0.18	PPBV	0.18	U
GRPCE-03-IA-	(Basement-W)	Trichloroethene		ND	0.061	0.18	PPBV	0.18	U
GRPCE-03-IA-	(Basement-W)	Tetrachloroethene	0.29		0.029	0.18	PPBV	0.29	
GRPCE-03-IA-	(Basement-W)	Vinyl Chloride		ND	0.12	0.46	UG/M3	0.46	U

CLIENTSAMPID		COMPOUND NAME	RESULTS	DATAFLAGS	MDL	REPLMT	UNITS	VALRESULTS	VALFLAGS
GRPCE-03-IA-	(Basement-W)	trans-1,2-Dichloroethene		ND	0.17	0.72	UG/M3	0.72	U
GRPCE-03-IA-	(Basement-W)	cis-1,2-Dichloroethene		ND	0.24	0.72	UG/M3	0.72	U
GRPCE-03-IA-	(Basement-W)	Trichloroethene		ND	0.33	0.98	UG/M3	0.98	U
GRPCE-03-IA-	(Basement-W)	Tetrachloroethene	2.0		0.20	1.2	UG/M3	2.0	



September 14, 2016

Betsy Nightingale On-Scene Coordinator U.S. Environmental Protection Agency Region 5 9311 Groh Road Grosse Ile, MI 48138-1697

Subject: Data Validation Reports

Grand Rapids VI ER

EPA Contract No. EP-S5-13-01

Technical Direction Document No. S05-0001-1605-010

Document Tracking No. 1078

Dear Ms. Nightingale:

Tetra Tech Inc. (Tetra Tech) is submitting these Data Validation Reports for seven air samples collected at the Grand Rapids VI ER site. The samples were collected on August 10 and September 2, 2016 and were analyzed for volatile organic compounds by Eurofins-Air Toxics Laboratory. Tetra Tech received the final data on September 12, 2016.

Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines* (NFG) for Superfund Organic Methods Data Review (August 2014).

No rejection of results was required for this data set. The data is usable as qualified based on the findings of this validation effort.

If you have any questions regarding these Data Validation Reports, please call me at (662) 681-5727.

Sincerely,

Jessica A. Vickers START Chemist

Enclosure

cc: Kevin Scott, Tetra Tech Program Manager

Michael Browning, Tetra Tech Project Manager

TDD File

Jesaca a Vickers

ATTACHMENT 1

DATA VALIDATION REPORTS EUROFINS-AIR TOXICS SDGS 1608165 AND 1609044

Site Name	Grand Rapids VI ER	TDD No.	S05-0001-1605-010	
Document Tracking No.	1078A	TOD NO.		
Data Reviewer (signature and date)	September 14, 2016	Technical Reviewer (signature and date)	Hang N. Elis III 14 September 2016	
Laboratory Report No.	1608165	Laboratory	Eurofins-Air Toxics/Folsom, CA	
Analyses	Volatile organic compounds (VOCs) by EPA Method TO-15			
Samples and Matrix	One air sample			
Field Duplicate Pairs	None			
Field Blanks	None			

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection of results was required for this data set. The data is usable as qualified based on the findings of this validation effort.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrument Performance Checks:

Within Criteria	Exceedance/Notes
Υ	

Initial Calibration:

Within Criteria	Exceedance/Notes
Υ	

Continuing Calibration:

Within Criteria	Exceedance/Notes
N	The continuing calibration verification was outside of acceptance limits for tetrachloroethene; therefore, the associated result was qualified as estimated (J).

Calibration Verification:

Within Criteria	Exceedance/Notes
Y	

Method blanks:

١	Within	Exceedance/Notes
(Criteria	Exceedance/ Notes
	Υ	

Field blanks:

Within Criteria	Exceedance/Notes
NA	



Interference Check Sam	iples (ICS)) (ICP	metals	only):
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Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	



Field d	luplic	cates
---------	--------	-------

Within Criteria	Exceedance/Notes
NA	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Υ	

Sample dilutions:

Within Criteria		Exceedance/Notes
Υ	1.60x: GRPCE-01-SS-	

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
Y	



Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	Results between the method detection limit and the reporting limit with qualified as estimated (J) by the laboratory.

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

other labe	···· / J.
Within	Even adams / Notes
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:

1	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample.			
J	The unaryte was positively identified, the associated value is the approximate concentration of the unaryte in the sample.			
J+ The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and 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.			



CLIENTSAMPID	COMPOUND NAME	RESULTS	DATAFLAGS	MDL	REPLMT	UNITS	VALRESULTS	VALFLAGS
GRPCE-01-SS-	Vinyl Chloride		ND	0.044	0.16	PPBV	0.16	U
GRPCE-01-SS-	trans-1,2-Dichloroethene		ND	0.060	0.16	PPBV	0.16	U
GRPCE-01-SS-	cis-1,2-Dichloroethene		ND	0.036	0.16	PPBV	0.16	U
GRPCE-01-SS-	Trichloroethene	0.079	J	0.035	0.16	PPBV	0.079	J
GRPCE-01-SS-	Tetrachloroethene	36		0.025	0.16	PPBV	36	J
GRPCE-01-SS-	Vinyl Chloride		ND	0.11	0.41	UG/M3	0.41	U
GRPCE-01-SS-	trans-1,2-Dichloroethene		ND	0.24	0.63	UG/M3	0.63	U
GRPCE-01-SS-	cis-1,2-Dichloroethene		ND	0.14	0.63	UG/M3	0.63	U
GRPCE-01-SS-	Trichloroethene	0.42	J	0.19	0.86	UG/M3	0.42	J
GRPCE-01-SS-	Tetrachloroethene	240		0.17	1.1	UG/M3	240	J

Site Name	Grand Rapids VI ER	TDD No.	S05-0001-1605-010		
Document Tracking No.	1078B	וטט ווסט.			
Data Reviewer (signature and date)	Jeoaca A. Vickers September 14, 2016	Technical Reviewer (signature and date)	14 September 2016		
Laboratory Report No.	1609044	Laboratory	Eurofins-Air Toxics/Folsom, CA		
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15			
Samples and Matrix	Six air samples				
Field Duplicate Pairs	None				
Field Blanks	None				

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection of results was required for this data set. The data is usable as qualified based on the findings of this validation effort.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrument Performance Checks:

Within Criteria	Exceedance/Notes
Υ	

Initial Calibration:

Within Criteria	Exceedance/Notes
Y	

Continuing Calibration:

Within Criteria	Fxceedance/Notes
Ν	The continuing calibration verification was outside of acceptance limits for cis-1,2-dichloroethene; therefore, all results for cis-1,2-dichloroethene (all non-detects) were qualified as estimated (UJ).

Calibration Verification:

Within Criteria	Exceedance/Notes
Y	

Method blanks:

Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Υ	

Field blanks:

Within Criteria	Exceedance/Notes
NA	



Interference Check Sam	iples (ICS)) (ICP	metals	only):
------------------------	-------------	--------	--------	--------

Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

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
NA	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Υ	

Sample dilutions:

Within Criteria		Exceed	ance/Notes	
	1.61x: GRPCE-04-IA-	(SFR) and GRPCE-05-IA-	(Basement-N)	
Υ	1.62x: GRPCE-04-IA-	(Main-Common)	1.66x: GRPCE-04-IA-	(Basement-S)
	1.65x: GRPCE-04-IA-	(2 nd Floor-N)	1.69x: GRPCE-04-IA-	(2 nd Floor-N)

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
Υ	

Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	Results between the method detection limit and the reporting limit with qualified as estimated (J) by the laboratory.

Tentatively identified compounds:

	,
Within	Even adamen / Natas
Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

other [specify].	
Within	Fyeografiance /Nicker
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:

1	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.
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.



CLIENTSAMPID		COMPOUND NAME	RESULTS	DATAFLAGS	MDL	REPLMT	UNITS	VALRESULTS	VALFLAGS
GRPCE-04-IA-	(2nd Floor-N)	Vinyl Chloride		ND	0.043	0.16	PPBV	0.16	U
GRPCE-04-IA-	(2nd Floor-N)	trans-1,2-Dichloroethene		ND	0.038	0.16	PPBV	0.16	U
GRPCE-04-IA-	(2nd Floor-N)	cis-1,2-Dichloroethene		ND	0.054	0.16	PPBV	0.16	UJ
GRPCE-04-IA-	(2nd Floor-N)	Trichloroethene	0.090	J	0.055	0.16	PPBV	0.090	J
GRPCE-04-IA-	(2nd Floor-N)	Tetrachloroethene	0.074	J	0.026	0.16	PPBV	0.074	J
GRPCE-04-IA-	(2nd Floor-N)	Vinyl Chloride		ND	0.11	0.42	UG/M3	0.42	U
GRPCE-04-IA-	(2nd Floor-N)	trans-1,2-Dichloroethene		ND	0.15	0.65	UG/M3	0.65	U
GRPCE-04-IA-	(2nd Floor-N)	cis-1,2-Dichloroethene		ND	0.21	0.65	UG/M3	0.65	UJ
GRPCE-04-IA-	(2nd Floor-N)	Trichloroethene	0.48	J	0.30	0.89	UG/M3	0.48	J
GRPCE-04-IA-	(2nd Floor-N)	Tetrachloroethene	0.50	J	0.18	1.1	UG/M3	0.50	J
GRPCE-04-IA-	(Main-Common)	Vinyl Chloride		ND	0.042	0.16	PPBV	0.16	U
GRPCE-04-IA-	(Main-Common)	trans-1,2-Dichloroethene		ND	0.038	0.16	PPBV	0.16	U
GRPCE-04-IA-	(Main-Common)	cis-1,2-Dichloroethene		ND	0.053	0.16	PPBV	0.16	UJ
GRPCE-04-IA-	(Main-Common)	Trichloroethene		ND	0.054	0.16	PPBV	0.16	U
GRPCE-04-IA-	(Main-Common)	Tetrachloroethene	0.15	J	0.026	0.16	PPBV	0.15	J
GRPCE-04-IA-	(Main-Common)	Vinyl Chloride		ND	0.11	0.41	UG/M3	0.41	U
GRPCE-04-IA-	(Main-Common)	trans-1,2-Dichloroethene		ND	0.15	0.64	UG/M3	0.64	U
GRPCE-04-IA-	(Main-Common)	cis-1,2-Dichloroethene		ND	0.21	0.64	UG/M3	0.64	UJ
GRPCE-04-IA-	(Main-Common)	Trichloroethene		ND	0.29	0.87	UG/M3	0.87	U
GRPCE-04-IA-	(Main-Common)	Tetrachloroethene	1.0	J	0.18	1.1	UG/M3	1.0	J
GRPCE-04-IA-	(SFR)	Vinyl Chloride		ND	0.042	0.16	PPBV	0.16	U
GRPCE-04-IA-	(SFR)	trans-1,2-Dichloroethene		ND	0.037	0.16	PPBV	0.16	U
GRPCE-04-IA-	(SFR)	cis-1,2-Dichloroethene		ND	0.052	0.16	PPBV	0.16	UJ
GRPCE-04-IA-	(SFR)	Trichloroethene		ND	0.054	0.16	PPBV	0.16	U
GRPCE-04-IA-	(SFR)	Tetrachloroethene	0.11	J	0.026	0.16	PPBV	0.11	J
GRPCE-04-IA-	(SFR)	Vinyl Chloride		ND	0.11	0.41	UG/M3	0.41	U
GRPCE-04-IA-	(SFR)	trans-1,2-Dichloroethene		ND	0.15	0.64	UG/M3	0.64	U
GRPCE-04-IA-	(SFR)	cis-1,2-Dichloroethene		ND	0.21	0.64	UG/M3	0.64	UJ
GRPCE-04-IA-	(SFR)	Trichloroethene		ND	0.29	0.86	UG/M3	0.86	U
GRPCE-04-IA-	(SFR)	Tetrachloroethene	0.74	J	0.17	1.1	UG/M3	0.74	J
GRPCE-05-IA-	(Basement-N)	Vinyl Chloride		ND	0.042	0.16	PPBV	0.16	U
GRPCE-05-IA-	(Basement-N)	trans-1,2-Dichloroethene		ND	0.037	0.16	PPBV	0.16	U
GRPCE-05-IA-	(Basement-N)	cis-1,2-Dichloroethene		ND	0.052	0.16	PPBV	0.16	UJ

CLIENTSAM	IPID	COMPOUND NAME	RESULTS	DATAFLAGS	MDL	REPLMT	UNITS	VALRESULTS	VALFLAGS
GRPCE-05-IA-	(Basement-N)	Trichloroethene	_	ND	0.054	0.16	PPBV	0.16	U
GRPCE-05-IA-	(Basement-N)	Tetrachloroethene	0.54		0.026	0.16	PPBV	0.54	
GRPCE-05-IA-	(Basement-N)	Vinyl Chloride		ND	0.11	0.41	UG/M3	0.41	U
GRPCE-05-IA-	(Basement-N)	trans-1,2-Dichloroethene		ND	0.15	0.64	UG/M3	0.64	U
GRPCE-05-IA-	(Basement-N)	cis-1,2-Dichloroethene		ND	0.21	0.64	UG/M3	0.64	UJ
GRPCE-05-IA-	(Basement-N)	Trichloroethene		ND	0.29	0.86	UG/M3	0.86	U
GRPCE-05-IA-	(Basement-N)	Tetrachloroethene	3.6		0.17	1.1	UG/M3	3.6	
GRPCE-04-IA-	(Basement-S)	Vinyl Chloride		ND	0.044	0.17	PPBV	0.17	U
GRPCE-04-IA-	(Basement-S)	trans-1,2-Dichloroethene		ND	0.038	0.17	PPBV	0.17	U
GRPCE-04-IA-	(Basement-S)	cis-1,2-Dichloroethene		ND	0.054	0.17	PPBV	0.17	UJ
GRPCE-04-IA-	(Basement-S)	Trichloroethene		ND	0.056	0.17	PPBV	0.17	U
GRPCE-04-IA-	(Basement-S)	Tetrachloroethene	0.40		0.026	0.17	PPBV	0.40	
GRPCE-04-IA-	(Basement-S)	Vinyl Chloride		ND	0.11	0.42	UG/M3	0.42	U
GRPCE-04-IA-	(Basement-S)	trans-1,2-Dichloroethene		ND	0.15	0.66	UG/M3	0.66	U
GRPCE-04-IA-	(Basement-S)	cis-1,2-Dichloroethene		ND	0.21	0.66	UG/M3	0.66	UJ
GRPCE-04-IA-	(Basement-S)	Trichloroethene		ND	0.30	0.89	UG/M3	0.89	U
GRPCE-04-IA-	(Basement-S)	Tetrachloroethene	2.7		0.18	1.1	UG/M3	2.7	
GRPCE-04-IA-	(Basement-W)	Vinyl Chloride		ND	0.044	0.17	PPBV	0.17	U
GRPCE-04-IA-	(Basement-W)	trans-1,2-Dichloroethene		ND	0.039	0.17	PPBV	0.17	U
GRPCE-04-IA-	(Basement-W)	cis-1,2-Dichloroethene		ND	0.055	0.17	PPBV	0.17	UJ
GRPCE-04-IA-	(Basement-W)	Trichloroethene		ND	0.057	0.17	PPBV	0.17	U
GRPCE-04-IA-	(Basement-W)	Tetrachloroethene	0.29		0.027	0.17	PPBV	0.29	
GRPCE-04-IA-	(Basement-W)	Vinyl Chloride		ND	0.11	0.43	UG/M3	0.43	U
GRPCE-04-IA-	(Basement-W)	trans-1,2-Dichloroethene		ND	0.16	0.67	UG/M3	0.67	U
GRPCE-04-IA-	(Basement-W)	cis-1,2-Dichloroethene		ND	0.22	0.67	UG/M3	0.67	UJ
GRPCE-04-IA-	(Basement-W)	Trichloroethene		ND	0.30	0.91	UG/M3	0.91	U
GRPCE-04-IA-	(Basement-W)	Tetrachloroethene	2.0		0.18	1.1	UG/M3	2.0	



September 21, 2016

Betsy Nightingale On-Scene Coordinator U.S. Environmental Protection Agency Region 5 9311 Groh Road Grosse Ile, MI 48138-1697

Subject: Data Validation Report

Grand Rapids VI ER

EPA Contract No. EP-S5-13-01

Technical Direction Document No. S05-0001-1605-010

Document Tracking No. 1084

Dear Ms. Nightingale:

Tetra Tech Inc. (Tetra Tech) is submitting this Data Validation Report for ten air samples collected at the Grand Rapids VI ER site. The samples were collected on September 8, 2016 and were analyzed for volatile organic compounds by Eurofins-Air Toxics Laboratory. Tetra Tech received the final data on September 15, 2016.

Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines* (NFG) for Superfund Organic Methods Data Review (August 2014).

No rejection of results was required for this data set. The data is usable as qualified based on the findings of this validation effort.

If you have any questions regarding this Data Validation Report, please call me at (662) 681-5727.

Sincerely,

Jessica A. Vickers START Chemist

Enclosure

cc: Kevin Scott, Tetra Tech Program Manager

Michael Browning, Tetra Tech Project Manager

TDD File

Jesaca a Vickers

ATTACHMENT 1

DATA VALIDATION REPORT EUROFINS-AIR TOXICS SDG 1609253

Site Name	Grand Rapids VI ER	TDD No	SOF 0001 160F 010	
Document Tracking No.	1084 TDD No.		S05-0001-1605-010	
Data Reviewer (signature and date)	Jeoaca A. Vickers September 19, 2016	Technical Reviewer (signature and date)	Hang N. Elis III 20 September 2016	
Laboratory Report No.	1609253	Laboratory	Eurofins-Air Toxics/Folsom, CA	
Analyses	Volatile organic compounds (VOCs) by EPA I	Method TO-15		
Samples and Matrix	Ten air samples			
Field Duplicate Pairs	GRPCE-04-IA- (Basement)/GRI GRPCE-05-IA- GRPCE-05-IA-	PCE-04-IA- DP	Basement)-DP and	
Field Blanks	None	<u>-</u>		

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection of results was required for this data set. The data is usable as qualified based on the findings of this validation effort.

Data completeness:

Within Criteria	Exceedance/Notes	
Y	Duplicate sample GRPCE-04-IA-laboratory. The sample identifier was corrected in the attachment to this validation checklist.	(Basemnt by the



Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes	
Y		
nstrument Performance Checks:		
Within Criteria	Exceedance/Notes	
Y		
nitial Calibration:		
Within Criteria	Exceedance/Notes	

Continuing Calibration:

Within Criteria	Exceedance/Notes
	The percent difference for trans-1,2-dichloroethene for the calibration performed on 09/13/16 exceeded the acceptance limit;
N	therefore, the non-detect trans-1,2-dichloroethene results for samples GRPCE-04-IA- (Main), GRPCE-04-IA-
	(Basement), GRPCE-04-IA- (Basement), and GRPCE-04-IA-1158 were qualified as estimated (UJ).

Calibration Verification:

Within Criteri	Exceedance/Notes
Υ	



Method blanks:

Withi Criter	Exceedance/Notes
Υ	

Field blanks:

Within Criteria	Exceedance/Notes
NA	

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

Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
N	GRPCE-04-IA- (Basement): Recovery for 4-bromofluorobenzene was above the acceptance limit; therefore, the tetrachloroethene result was qualified as estimated with a possible high bias (J+). No further qualifications were applied because the associated results were non-detect.
N	GRPCE-04-IA- (Main): Recovery for 4-bromofluorobenzene was above the acceptance limit; therefore, the tetrachloroethene and trichloroethene results were qualified as estimated with a possible high bias (J+). No further qualifications were applied because the associated results were non-detect.

MS/MSD:

Within Criteria	Exceedance/Notes
NA	



Post digestion spikes:	
Within	Exceedance/Notes
Criteria	
NA	
Serial dilutions:	
Within	
Criteria	Exceedance/Notes
NA	
Laboratory duplicates:	
Within	Exceedance/Notes
Criteria	Exceedance/Notes
NA	
Field duplicates:	
Within	Exceedance/Notes
Criteria	·
Υ	
LCSs/LCSDs:	
Within	Exceedance/Notes
Criteria	LACEEudilce/ NOCES



Υ

Sample dilutions:

Within Criteria	Exceedance/Notes			
	1.36x: GRPCE-04-IA-	(Basement)-DP		
	1.58x: GRPCE-04-IA-	(Main), GRPCE-04-IA-	(Basement), and GRPCE-04-IA-	(Basement)
Υ	1.67x: GRPCE-04-IA-	(Basement) and GRPCE-04-IA-115	8	
	3.16x: GRPCE-05-IA-		3.38x: GRPCE-04-IA-	(Main)
	3.32x: GRPCE-05-IA-		15.7x: GRPCE-04-IA-	(Main)

Re-extraction and reanalysis:

Within Criteria	Fxceedance/Notes
NA	

Second column confirmation (GC and HPLC analyses only):

Within Criteria	Exceedance/Notes
NA	

Internal Standards:

Within Criteria	Exceedance/Notes
Υ	

Target analyte identification:

8	.,,
Within	Fuse adapted /Nichoo
Criteria	Exceedance/Notes
Υ	



Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	Results between the method detection limit and the reporting limit with qualified as estimated (J) by the laboratory.

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Fxceedance/Notes
Υ	

Other [specify]:

other [specify].		
Within	Evene de mas /Natas	
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.



CLIENTSAM	PID	COMPOUND NAME	RESULTS	DATAFLAGS	MDL	REPLMT	UNITS	VALRESULTS	VALFLAGS
GRPCE-04-IA-	(Main)	Vinyl Chloride		ND	0.43	1.6	PPBV	1.6	U
GRPCE-04-IA-	(Main)	trans-1,2-Dichloroethene		ND	0.59	1.6	PPBV	1.6	UJ
GRPCE-04-IA-	(Main)	cis-1,2-Dichloroethene		ND	0.35	1.6	PPBV	1.6	U
GRPCE-04-IA-	(Main)	Trichloroethene		ND	0.34	1.6	PPBV	1.6	U
GRPCE-04-IA-	(Main)	Tetrachloroethene		ND	0.25	1.6	PPBV	1.6	U
GRPCE-04-IA-	(Main)	Vinyl Chloride		ND	1.1	4.0	UG/M3	4.0	U
GRPCE-04-IA-	(Main)	trans-1,2-Dichloroethene		ND	2.3	6.2	UG/M3	6.2	UJ
GRPCE-04-IA-	(Main)	cis-1,2-Dichloroethene		ND	1.4	6.2	UG/M3	6.2	U
GRPCE-04-IA-	(Main)	Trichloroethene		ND	1.8	8.4	UG/M3	8.4	U
GRPCE-04-IA-	(Main)	Tetrachloroethene		ND	1.7	11	UG/M3	11	U
GRPCE-04-IA-	(Basement)	Vinyl Chloride		ND	0.035	0.16	PPBV	0.16	U
GRPCE-04-IA-	(Basement)	trans-1,2-Dichloroethene		ND	0.047	0.16	PPBV	0.16	U
GRPCE-04-IA-	(Basement)	cis-1,2-Dichloroethene		ND	0.045	0.16	PPBV	0.16	U
GRPCE-04-IA-	(Basement)	Trichloroethene	0.069	J	0.047	0.16	PPBV	0.069	J
GRPCE-04-IA-	(Basement)	Tetrachloroethene	0.23		0.043	0.16	PPBV	0.23	
GRPCE-04-IA-	(Basement)	Vinyl Chloride		ND	0.090	0.40	UG/M3	0.40	U
GRPCE-04-IA-	(Basement)	trans-1,2-Dichloroethene		ND	0.19	0.63	UG/M3	0.63	U
GRPCE-04-IA-	(Basement)	cis-1,2-Dichloroethene		ND	0.18	0.63	UG/M3	0.63	U
GRPCE-04-IA-	(Basement)	Trichloroethene	0.37	J	0.25	0.85	UG/M3	0.37	J
GRPCE-04-IA-	(Basement)	Tetrachloroethene	1.5		0.29	1.1	UG/M3	1.5	
GRPCE-04-IA-	(Main)	Vinyl Chloride		ND	0.075	0.34	PPBV	0.34	U
GRPCE-04-IA-	(Main)	trans-1,2-Dichloroethene		ND	0.10	0.34	PPBV	0.34	U
GRPCE-04-IA-	(Main)	cis-1,2-Dichloroethene		ND	0.097	0.34	PPBV	0.34	U
GRPCE-04-IA-	(Main)	Trichloroethene		ND	0.10	0.34	PPBV	0.34	U
GRPCE-04-IA-	(Main)	Tetrachloroethene	0.16	J	0.092	0.34	PPBV	0.16	J
GRPCE-04-IA-	(Main)	Vinyl Chloride		ND	0.19	0.86	UG/M3	0.86	U
GRPCE-04-IA-	(Main)	trans-1,2-Dichloroethene		ND	0.40	1.3	UG/M3	1.3	U
GRPCE-04-IA-	(Main)	cis-1,2-Dichloroethene		ND	0.38	1.3	UG/M3	1.3	U
GRPCE-04-IA-	(Main)	Trichloroethene		ND	0.54	1.8	UG/M3	1.8	U
GRPCE-04-IA-	(Main)	Tetrachloroethene	1.1	J	0.63	2.3	UG/M3	1.1	J
GRPCE-04-IA-	(Basement)	Vinyl Chloride		ND	0.037	0.17	PPBV	0.17	U
GRPCE-04-IA-	(Basement)	trans-1,2-Dichloroethene		ND	0.050	0.17	PPBV	0.17	U
GRPCE-04-IA-	(Basement)	cis-1,2-Dichloroethene		ND	0.048	0.17	PPBV	0.17	U

CLIENTSAM	//PID	COMPOUND NAME	RESULTS	DATAFLAGS	MDL	REPLMT	UNITS	VALRESULTS	VALFLAGS
GRPCE-04-IA-	(Basement)	Trichloroethene	•	ND	0.050	0.17	PPBV	0.17	U
GRPCE-04-IA-	(Basement)	Tetrachloroethene	0.50		0.046	0.17	PPBV	0.50	J+
GRPCE-04-IA-	(Basement)	Vinyl Chloride		ND	0.095	0.43	UG/M3	0.43	U
GRPCE-04-IA-	(Basement)	trans-1,2-Dichloroethene		ND	0.20	0.66	UG/M3	0.66	U
GRPCE-04-IA-	(Basement)	cis-1,2-Dichloroethene		ND	0.19	0.66	UG/M3	0.66	U
GRPCE-04-IA-	(Basement)	Trichloroethene		ND	0.27	0.90	UG/M3	0.90	U
GRPCE-04-IA-	(Basement)	Tetrachloroethene	3.4		0.31	1.1	UG/M3	3.4	J+
GRPCE-04-IA-	(Main)	Vinyl Chloride		ND	0.035	0.16	PPBV	0.16	U
GRPCE-04-IA-	(Main)	trans-1,2-Dichloroethene		ND	0.047	0.16	PPBV	0.16	U
GRPCE-04-IA-	(Main)	cis-1,2-Dichloroethene		ND	0.045	0.16	PPBV	0.16	U
GRPCE-04-IA-	(Main)	Trichloroethene	0.048	J	0.047	0.16	PPBV	0.048	J+
GRPCE-04-IA-	(Main)	Tetrachloroethene	0.091	J	0.043	0.16	PPBV	0.091	J+
GRPCE-04-IA-	(Main)	Vinyl Chloride		ND	0.090	0.40	UG/M3	0.40	U
GRPCE-04-IA-	(Main)	trans-1,2-Dichloroethene		ND	0.19	0.63	UG/M3	0.63	U
GRPCE-04-IA-	(Main)	cis-1,2-Dichloroethene		ND	0.18	0.63	UG/M3	0.63	U
GRPCE-04-IA-	(Main)	Trichloroethene	0.26	J	0.25	0.85	UG/M3	0.26	J+
GRPCE-04-IA-	(Main)	Tetrachloroethene	0.62	J	0.29	1.1	UG/M3	0.62	J+
GRPCE-05-IA-		Vinyl Chloride		ND	0.070	0.32	PPBV	0.32	U
GRPCE-05-IA-		trans-1,2-Dichloroethene		ND	0.094	0.32	PPBV	0.32	U
GRPCE-05-IA-		cis-1,2-Dichloroethene		ND	0.091	0.32	PPBV	0.32	U
GRPCE-05-IA-		Trichloroethene		ND	0.094	0.32	PPBV	0.32	U
GRPCE-05-IA-		Tetrachloroethene	0.14	J	0.086	0.32	PPBV	0.14	J
GRPCE-05-IA-		Vinyl Chloride		ND	0.18	0.81	UG/M3	0.81	U
GRPCE-05-IA-		trans-1,2-Dichloroethene		ND	0.37	1.2	UG/M3	1.2	U
GRPCE-05-IA-		cis-1,2-Dichloroethene		ND	0.36	1.2	UG/M3	1.2	U
GRPCE-05-IA-		Trichloroethene		ND	0.50	1.7	UG/M3	1.7	U
GRPCE-05-IA-		Tetrachloroethene	0.98	J	0.59	2.1	UG/M3	0.98	J
GRPCE-05-IA-DP		Vinyl Chloride		ND	0.074	0.33	PPBV	0.33	U
GRPCE-05-IA-DP		trans-1,2-Dichloroethene		ND	0.099	0.33	PPBV	0.33	U
GRPCE-05-IA-DP		cis-1,2-Dichloroethene		ND	0.095	0.33	PPBV	0.33	U
GRPCE-05-IA-DP		Trichloroethene		ND	0.099	0.33	PPBV	0.33	U
GRPCE-05-IA-DP		Tetrachloroethene	0.11	J	0.091	0.33	PPBV	0.11	J
GRPCE-05-IA-DP		Vinyl Chloride		ND	0.19	0.85	UG/M3	0.85	U

CLIENTSAM	PID	COMPOUND NAME	RESULTS	DATAFLAGS	MDL	REPLMT	UNITS	VALRESULTS	VALFLAGS
GRPCE-05-IA-		trans-1,2-Dichloroethene		ND	0.39	1.3	UG/M3	1.3	U
GRPCE-05-IA-DP		cis-1,2-Dichloroethene		ND	0.38	1.3	UG/M3	1.3	U
GRPCE-05-IA-DP		Trichloroethene		ND	0.53	1.8	UG/M3	1.8	U
GRPCE-05-IA-		Tetrachloroethene	0.75	J	0.62	2.2	UG/M3	0.75	J
GRPCE-04-IA-	(Basement)	Vinyl Chloride		ND	0.043	0.16	PPBV	0.16	U
GRPCE-04-IA-	(Basement)	trans-1,2-Dichloroethene		ND	0.059	0.16	PPBV	0.16	UJ
GRPCE-04-IA-	(Basement)	cis-1,2-Dichloroethene		ND	0.036	0.16	PPBV	0.16	U
GRPCE-04-IA-	(Basement)	Trichloroethene		ND	0.034	0.16	PPBV	0.16	U
GRPCE-04-IA-	(Basement)	Tetrachloroethene	0.35		0.025	0.16	PPBV	0.35	
GRPCE-04-IA-	(Basement)	Vinyl Chloride		ND	0.11	0.40	UG/M3	0.40	U
GRPCE-04-IA-	(Basement)	trans-1,2-Dichloroethene		ND	0.24	0.63	UG/M3	0.63	UJ
GRPCE-04-IA-	(Basement)	cis-1,2-Dichloroethene		ND	0.14	0.63	UG/M3	0.63	U
GRPCE-04-IA-	(Basement)	Trichloroethene		ND	0.18	0.85	UG/M3	0.85	U
GRPCE-04-IA-	(Basement)	Tetrachloroethene	2.4		0.17	1.1	UG/M3	2.4	
GRPCE-04-IA-	(Basement)-DP	Vinyl Chloride		ND	0.037	0.14	PPBV	0.14	U
GRPCE-04-IA-	(Basement)-DP	trans-1,2-Dichloroethene		ND	0.051	0.14	PPBV	0.14	UJ
GRPCE-04-IA-	(Basement)-DP	cis-1,2-Dichloroethene		ND	0.031	0.14	PPBV	0.14	U
GRPCE-04-IA-	(Basement)-DP	Trichloroethene		ND	0.030	0.14	PPBV	0.14	U
GRPCE-04-IA-	(Basement)-DP	Tetrachloroethene	0.30		0.021	0.14	PPBV	0.30	
GRPCE-04-IA-	(Basement)-DP	Vinyl Chloride		ND	0.095	0.35	UG/M3	0.35	U
GRPCE-04-IA-	(Basement)-DP	trans-1,2-Dichloroethene		ND	0.20	0.54	UG/M3	0.54	UJ
GRPCE-04-IA-	(Basement)-DP	cis-1,2-Dichloroethene		ND	0.12	0.54	UG/M3	0.54	U
GRPCE-04-IA-	(Basement)-DP	Trichloroethene		ND	0.16	0.73	UG/M3	0.73	U
GRPCE-04-IA-	(Basement)-DP	Tetrachloroethene	2.0		0.14	0.92	UG/M3	2.0	
GRPCE-04-IA-1158		Vinyl Chloride		ND	0.046	0.17	PPBV	0.17	U
GRPCE-04-IA-1158		trans-1,2-Dichloroethene		ND	0.063	0.17	PPBV		UJ
GRPCE-04-IA-1158		cis-1,2-Dichloroethene		ND	0.038	0.17	PPBV		U
GRPCE-04-IA-1158		Trichloroethene	0.10	J	0.036	0.17	PPBV	0.10	J
GRPCE-04-IA-1158		Tetrachloroethene	0.31		0.026	0.17	PPBV	0.31	
GRPCE-04-IA-1158		Vinyl Chloride		ND	0.12	0.43	UG/M3	0.43	U
GRPCE-04-IA-1158		trans-1,2-Dichloroethene		ND	0.25	0.66	UG/M3	0.66	UJ
GRPCE-04-IA-1158		cis-1,2-Dichloroethene		ND	0.15	0.66	UG/M3	0.66	U
GRPCE-04-IA-1158		Trichloroethene	0.54	J	0.20	0.90	UG/M3	0.54	J

CLIENTSAMPID	COMPOUND NAME	RESULTS	DATAFLAGS	MDL	REPLMT	UNITS	VALRESULTS	VALFLAGS
GRPCE-04-IA-1158	Tetrachloroethene	2.1		0.18	1.1	UG/M3	2.1	



October 5, 2016

Betsy Nightingale On-Scene Coordinator U.S. Environmental Protection Agency Region 5 9311 Groh Road Grosse Ile, MI 48138-1697

Subject: Data Validation Reports

Grand Rapids VI ER

EPA Contract No. EP-S5-13-01

Technical Direction Document No. S05-0001-1605-010

Document Tracking No. 1115

Dear Ms. Nightingale:

Tetra Tech Inc. (Tetra Tech) is submitting these Data Validation Reports for 40 air samples (including four field duplicates) collected at the Grand Rapids VI ER site. The samples were collected from September 7 through 27, 2016 and were analyzed for volatile organic compounds by Bureau Veritas Laboratories. Tetra Tech received the final data on September 30, 2016.

Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines* (NFG) for Superfund Organic Methods Data Review (August 2014).

No rejection of results was required for this data set. The data is usable as qualified based on the findings of this validation.

If you have any questions regarding these Data Validation Reports, please call me at (662) 681-5727.

Sincerely,

Jessica A. Vickers START Chemist

Enclosure

cc: Kevin Scott, Tetra Tech Program Manager

Michael Browning, Tetra Tech Project Manager

TDD File

Jesaca a Vickers

ATTACHMENT 1

DATA VALIDATION REPORTS SDGS 16090390, 16090684, 16090873, 16090874, 16091215, AND 16091662

Site Name	Grand Rapids VI ER	TDD No.		S05-0001-1605-010	
Document Tracking No.	1115A	IDD NO.		303-0001-1603-010	
Data Reviewer (signature and date)	Jesaca A. Vickers October 3, 2016	Technical Revio	date)	Hang N. Elis III	
Laboratory Report No.	16090390	Laboratory		Bureau Veritas/Novi, MI	
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15			
Samples and Matrix	Eight air samples (including a field duplicate)				
Field Duplicate Pairs	GRPCE-27-IA- 2)/GRPCE-27-IA- 2)-DP				
Field Blanks	None				

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection of results was required for this data set. The data is usable as qualified based on the findings of this validation effort.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrument Performance Checks:

Within Criteria	Exceedance/Notes
Υ	

Initial Calibration:

Within Criteria	Exceedance/Notes
Y	

Continuing Calibration:

Within Criteria	Exceedance/Notes
Υ	

Calibration Verification:

Within Criteria	Exceedance/Notes
NA	

Method blanks:

Within Criteria	Exceedance/Notes
N	Tetrachloroethene was detected in the method blank below the reporting limit (RL). The tetrachloroethene results for GRPCE-27-IA- 2), GRPCE-27-IA- 2)-DP, and GRPCE-30-OA- were qualified as estimated with a possible high bias (J+). No further qualifications were required because the associated results were greater than ten times the blank value.



	EIA REGION S START CONTRACT		
Field blank	ield blanks:		
Within Criteria	Exceedance/Notes		
NA			
Interferenc	te Check Samples (ICS) (ICP metals only):		
Within Criteria	Exceedance/Notes		
NA			
	nitoring compounds (surrogates and labeled compounds):		
Within Criteria	Exceedance/Notes		
Y			
'			
MS/MSD:			
Within Criteria	Exceedance/Notes		
NA			
Post digest	ion spikes:		
Within	Exceedance/Notes		
Criteria			
NA			
Serial diluti	ions:		
Within Criteria	Exceedance/Notes		



NA

Laborator	y duplicates:
-----------	---------------

Within Criteria	Exceedance/Notes
NA	

Field duplicates:

Within Criteria	Exceedance/Notes
Υ	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Υ	

Sample dilutions:

Within Criteria	Exceedance/Notes
Υ	GRPCE-27-IA- 1) was analyzed at a 1.48 dilution.

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
Υ	

Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	The laboratory qualified results between the RL and method detection limit as estimated (J).

Tentatively identified compounds:

	,
Within	Exceedance/Notes
Criteria	
NA	

System performance and instrument stability:

Within	Exceedance/Notes
Criteria	
Υ	

Other [specify]:

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:

1	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.
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.





Date: 09-Sep-16

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16090390

Sample Identification GRPCE-26-IA

PCE-26-IA-BASEMENT)

Date Sampled: 9/7/2016

Lab Number:

007A

Date Received: 9/7/2016

Sample Type:

Air, Can

Analysis Date: 9/8/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-1.4 psig

Final Pressure:

-1.4 psig

Canister ID:

14024

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	0 040 3	0 024	0.16	0.0103	.0061	0.04	1	1
127-18-4	Tetrachloroethene	1.2	0.036	0.27	0.18	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	20	0.019	0.16	5.0	0.0049	0.04	1	
79-01-6	Trichloroethene	0.11 3	0 021	0.21	0.020	0.0039	0.04	1	1
75-01-4	Vinyl Chloride	ND	0.022	0.10	W) NB	0.0088	0.041	I	



^{-;} Information not available or not applicable.

ND: Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S: Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E: Value exceeds linear range of calibration curve



Date: 09-Sep-16

Project: GRAND RAPIDS EMERGENCY RESPONSE

Sample Identification GRPCE-26-1A-

Date Sampled: 9/7/2016

Work Order No: 16090390

Lab Number: 006A

Date Received: 9/7/2016

Sample Type: Air, Can

Analysis Date: 9/8/2016

Test Method: EPA Method TO-15A

TETRA TECH

Analyst: DRS

Initial Pressure:

-1.09 psig

Final Pressure:

-1.09 psig

Canister ID:

Client:

14461

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m²) (ug/m²) (ug/m³) (ppbV) (ppbV) (ppbV) DF	Qual
156-59-2	cis-1.2-Dichloroethene	0.040 3 0.024 0.16 0.010 3 0061 0.04 1	1
127-18-4	Tetrachloroethene	1.0 0.036 0.27 0.15 0.0053 0.04 1	
156-60-5	trans-1.2-Dichloroethene	8.1 0.019 0.16 2.1 0.0049 0.04 1	
79-01-6	Trichloroethene	011 5 0021 0.21 0.020 5 0.0039 0.04 1	1
75-01-4	Vinyl Chloride	0.022 0.10 NO 0.0088 0.04 U 1	



- -; Information not available or not applicable.
- ND; Less than the indicated limit of detection (LOD)
- RL: Report Limit
- J. Value is between the MDL and Reporting Limit, estimated r
- MDL; Method Detection Limit

- B; Analyte detected in the associated Method Blank
- S; Spike Recovery outside accepted recovery limits
- R; RPD outside accepted recovery limits
- T, Tentatively Identified Compound (TIC)
- E; Value exceeds linear range of calibration curve



Date: 09-Sep-16

Client:	TETRA TECH
Project:	GRAND RAPIDS EMERGENCY RESPONSE
The state of the s	

Sample Identification GRPCE-26-IA-1168(BASEMENT) Lab Number: 005A

Date Sampled: 9/7/2016

Work Order No: 16090390

Sample Type: Air, Can Date Received: 9/7/2016 Analysis Date: 9/8/2016

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

Test Method:

-1.97 psig

-1.97 psig

Final Pressure: Canister ID: 14537

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	0.040 3	0.024	0.16	0.010J	.0061	0.04	1	1
127-18-4	Tetrachloroethene	1,3	0.036	0.27	0.19	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	15	0.019	0.16	3.7	0.0049	0.04	1	
79-01-6	Trichloroethene	0.11.7	0.021	0.21	0.0203	1.0039	0.04	1	1
75-01-4	Vinyl Chloride	ALIX	0.022	0.10	1 24 P.T	0.0088	€0.04 €	1	



^{-.} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R, RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve:



Date: 09-Sep-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16090390

Sample Identification GRPCE-26-1A-

Date Sampled: 9/7/2016

Lab Number:

004A

Date Received: 9/7/2016

Sample Type:

Air, Can

Analysis Date: 9/8/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-1.95 psig

Final Pressure:

-1.95 psig

Canister ID:

13963

CAS#	Analyte		MDL ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Quat
156-59-2	cis-1,2-Dichloroethene	0.040 3	0.024	0.16	0.010.7	.0061	0.04	1	1
127-18-4	Tetrachloroethene	114	0.036	0.27	0.21	0.0053	0.04	U	
156-60-5	trans-1,2-Dichloroethene	18	0.019	0.16	4.5	0.0049	0.04	1	
79-01-6	Trichloroethene	0.11 3	0.021	0.21	0.0203	0.0039	0.04	1	1
75-01-4	Vinyl Chloride	dit	0.022	0.10	A) MD	0 0088	6.042	0	



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL: Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 09-Sep-16

Client:	TETRA TECH			
Project:	GRAND RAPIDS EMERGENCY	Y RESPONSE	Work Order No:	16090390
Sample Identificat	tion GRPCE-27-1A-1)		Date Sampled:	9/7/2016
Lab Number:	001A		Date Received:	9/7/2016
Sample Type:	Air, Can		Analysis Date:	9/8/2016
Test Method:	EPA Method TO-15A	1	Analyst:	DRS
Initial Pressure:	-5.8 psig			
Final Pressure:	-1.6 psig			
Canister ID:	13970			

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (pphV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	0.12 3	0 036	0.23	0.030 J	0.009	0.059	1.48	1
127-18-4	Tetrachloroethene	0.70	0.053	0.40	0.10	0 0078	0.059	1.48	
156-60-5	trans-1,2-Dichloroethene	0.18 3	0.029	0.23	0.0445	0.0073	0.059	1.48	1
79-01-6	Trichloroethene	0.16 3	0 031	0.32	0.030 3	1.0058	0.059	1.48	
75-01-4	Vinyl Chloride	NIS	0.033	0.15	U) NB	0 013	0 0596	48	



^{-:} Information not available or not applicable

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R, RPD outside accepted recovery limits

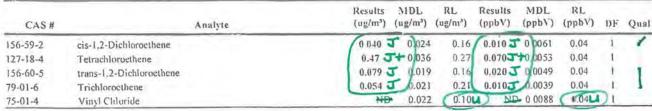
T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 09-Sep-16

Client: TETRA TECH Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16090390 Sample Identification GRPCE-27-IA-Date Sampled: 9/7/2016 Date Received: 9/7/2016 Lab Number: 002A Analysis Date: 9/8/2016 Sample Type: Air, Can Test Method: EPA Method TO-15A Analyst: DRS Initial Pressure: -2.94 psig Final Pressure: -2.94 psig Canister ID: 14479





General Notes and Qualifiers:

--; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T: Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 09-Sep-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16090390

Sample Identification GRPCE-27-IA-

Date Sampled: 9/7/2016

Lab Number:

Sample Type:

003A Air, Can Date Received: 9/7/2016

Test Method:

EPA Method TO-15A

Analysis Date: 9/8/2016 Analyst: DRS

Initial Pressure:

-1.65 psig

Final Pressure:

-1.65 psig

Canister ID:

13967

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m²) (ug/m²) (ug/m²) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1.2-Dichloroethene	0.024 (0.164) ND 0.0061 (0.044)
127-18-4	Tetrachloroethene	0.41 3+ 0.036 0.27 0.060 3+ 0.0053 0.04 1
156-60-5	trans-1.2-Dichloroethene	0.12 3 0.019 0.16 0.030 3 0.0049 0.04 1
79-01-6	Trichloroethene	0.054 3 0.021 0.21 0.010 3 0039 0.04 1
75-01-4	Vinyl Chloride	0.022 0.10 NO- 0 0088 0.04 U



^{-,} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

J. Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



cis-1.2-Dichloroethene

trans-1,2-Dichloroethene

Tetrachloroethene

Trichloroethene

Vinyl Chloride

Date: 09-Sep-16

(ppbV)

0.04

0.04

0 04

0 04

DF Qual

(ppbV)

(ppbV)

0.16

0.27

0.16

0.10 4

(ug/m3) (ug/m3) (ug/m3)

024

0.019

0 040 J

0 040 3

0 41 J+ 0 036

0 054 3 /0 021

0 022

Client:	TETRA TECH			
Project:	GRAND RAPIDS EMERGENCY RESPONSE		Work Order No:	16090390
Sample Identificat	ion GRPCE-30-OA-1170		Date Sampled:	9/7/2016
Lab Number:	008A		Date Received:	9/7/2016
Sample Type:	Air, Can		Analysis Date:	9/8/2016
Test Method:	EPA Method TO-15A		Analyst:	DRS
Initial Pressure:	-1.89 psig			
Final Pressure:	-1.89 psig			
Canister ID:	14040			



0 010 3 0 0061

0.060 3+0 0053

0.010 3 00049

0.010 10 0039

General Notes and Qualifiers:

CAS#

156-59-2

127-18-4

156-60-5

79-01-6

75-01-4

-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDI, and Reporting Limit, estimated r T; Tentatively Identified Compound (TIC)

MDL; Method Detection Limit

Analyte

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

E; Value exceeds linear range of calibration curve

Site Name	Site Name Grand Rapids VI ER		S05-0001-1605-010	
Document Tracking No.	1115B	TDD No.	303-0001-1003-010	
Data Reviewer (signature and date)	Jeoaca A. Vickero October 4, 2016	Technical Reviewer (signature and date) Technical Reviewer (Solia Time of the Control of the Co		
Laboratory Report No.	16090684	Laboratory	Bureau Veritas/Novi, MI	
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15		
Samples and Matrix Seven air samples				
Field Duplicate Pairs	licate Pairs None			
Field Blanks	None			

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrum	nent	Performance Checks:
With		Exceedance/Notes
Criter	ria	Exceedance/Notes
Υ		
Initial C	^alih	ration

Initial Calibration:

Within Criteria	Exceedance/Notes
Υ	

Continuing Calibration:

Within Criteria	Exceedance/Notes
Υ	

Calibration Verification:

Within Criteria	Exceedance/Notes
NA	

Method blanks:

Within Criteria	Exceedance/Notes
Υ	

Field blanks:

Within Criteria	Exceedance/Notes
NA	



Interference Check Sam	iples (ICS)) (ICP	metals	only):
------------------------	-------------	--------	--------	--------

Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	



Field duplicat	tes:	
Within Criteria	Exceedance/Notes	
NA		
LCSs/LCSDs:		
Within Criteria	Exceedance/Notes	
Υ		
Sample diluti	ons:	
Within Criteria	Exceedance/Notes	
NA		
Re-extraction	n and reanalysis:	
Within Criteria	Exceedance/Notes	
NA		
Second colun	nn confirmation (GC and HPLC analyses only):	
Within Criteria	Exceedance/Notes	
NA		
Internal Stan	dards:	
Within Criteria	Exceedance/Notes	



Target analyte identification	Target	analy	vte i	iden	tifica	ition
-------------------------------	--------	-------	-------	------	--------	-------

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	The laboratory qualified results between the RL and method detection limit as estimated (J).

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

Other labe	
Within	Even adams / Nintes
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:

1	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.
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.





cis-1,2-Dichloroethenc

trans-1,2-Dichloroethene

Tetrachloroethene

Trichloroethene

Vinyl Chloride

Date: 29-Sep-16

Client:	TETRA TECH								
Project:	GRAND RAPIDS EMERGENCY RESPONSE				Work Or	der No:	16090684	4	
Sample Identifica	tion GRPCE-27-1A (BASEMENT)				Date Sa	mpled:	9/11/201	6	
Lab Number:	006A				Date Re	eceived:	9/12/201	6	
Sample Type:	Air, Can				Analys	is Date:	9/12/201	6	
Test Method:	EPA Method TO-15A				A	nalyst:	DRS		
Initial Pressure:	-0.99 psig								
Final Pressure:	-0.99 psig								
Canister ID:	14246								
CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qua

0.040 3

1.9

64

0.21

0.024

0.036

0.019

0.021

0.022

0.16

0.27

0.16

0.21

0.104

0.010 J

0.28

16

0.040



8800 0 -GIA

.0061

.0053

0.0049

0.0039

0.04

0.04

0.04

0.04

0.044

1

156-59-2

127-18-4

156-60-5

79-01-6

75-01-4

^{-,} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J: Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B: Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T: Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 29-Sep-16

Client:	TETRA TECH	The second secon
Project:	GRAND RAPIDS EMERGENCY RESPONSE	Work Order No: 16090684
Sample Iden	ntification GRPCE-27-1A-MAIN)	Date Sampled: 9/11/2016
Lab Numbe	r: 005A	Date Received: 9/12/2016
Sample Typ	e: Air, Can	Analysis Date: 9/12/2016
Test Method	d: EPA Method TO-15A	Analyst: DRS
Initial Press	sure: -1.82 psig	
Final Pressu	are: -1.82 psig	
Canister ID	: 14404	
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 0.16 W ND 0 0061 (6.04W)1
127-18-4	Tetrachloroethene	1.1 0.036 0.27 0.16 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	5.7 0.019 0.16 1.4 0.0049 0.04 1
79-01-6	Trichloroethene	0.16 3 0.021 0.21 0.030 3 0039 0.04 1
75-01-4	Vinyl Chloride	ND 0.022 (0.104) ND 0.0088 (0.044) 1



^{-,} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL: Method Detection Limit

B; Analyte detected in the associated Method Blank

S. Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 29-Sep-16

Date Sampled: 9/11/2016 Date Received: 9/12/2016

Analysis Date: 9/12/2016

Analyst: DRS

TETRA TECH Client:

GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16090684 Project:

Sample Identification GRPCE-27-IA-I BASEMENT)

Lab Number: 004A

Sample Type: Air, Can

Test Method: EPA Method TO-15A

Initial Pressure: -1.82 psig Final Pressure: -1.82 psig

Canister ID: 14144

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	0 040	0 024	0.16	0.010 J	0061	0.04	1	Y
127-18-4	Tetrachloroethene	3.9	0.036	0.27	0.57	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethenc	52	0.019	0.16	13	0.0049	0.04	1	
79-01-6	Trichloroethene	0.16 3	0 021	0.21	0.030	0.0039	0.04	1	3
75-01-4	Vinyl Chloride	CIA	0.022	0.10	u) NE	0 0088	(6.04L	1	



^{-,} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B: Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R: RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E: Value exceeds linear range of calibration curve



trans-1,2-Dichloroethene

Trichloroethene

Vinyl Chloride

Date: 29-Sep-16

Client:	TETRA TECH								
Project:	GRAND RAPIDS EMERGENCY RESPONSE			1	Work Or	der No:	16090684	1	
Sample Identifica	tion GRPCE-27-1A-				Date Sa	mpled:	9/11/2010	6	
Lab Number: 003A				Date Received: 9/12/2016				6	
Sample Type:	Air, Can	Analysis Date: 9/		9/12/2016					
Test Method: EPA Method TO-15A					A	nalyst:	DRS		
Initial Pressure:	-1.99 psig								
Final Pressure:	-1.99 psig								
Canister ID:	13988								
CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qua
	-1,2-Dichloroethene	2.3	0.024		-	0 0061	0.64 4) 1	

24

0.11 J

ND-

0.019

0.021

0.022

0.16

6.1



010 HD 00088 0.04U

0.020 0.0039

.0049

0.04

0.04

156-60-5

79-01-6

75-01-4

-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B: Analyte detected in the associated Method Blank

S: Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Date: 29-Sep-16

Date Received: 9/12/2016 Analysis Date: 9/12/2016

Analyst: DRS

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16090684

Sample Identification GRPCE-28-IA-1 Date Sampled: 9/11/2016

Lab Number: 001A

Sample Type: Air, Can

Test Method: EPA Method TO-15A

Initial Pressure: -2.35 psig

Final Pressure: -2.35 psig Canister ID: 14178

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	0.079	0 024	0.16	0.020 3	.0061	0.04	1	6
127-18-4	Tetrachloroethene	0.54	0 036	0.27	0.080	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	0.20	0 019	0.16	0.050	0.0049	0.04	1	
79-01-6	Trichloroethene	0113	0 021	0.21	0.020 J	0.0039	0.04	1	6
75-01-4	Vinyl Chloride	AND AND	0 022	0.10	AT THE	0 0088	0.041	1	



-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Date: 29-Sep-16

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16090684

Sample Identification GRPCE-28-IA-

-IA- 2)

Date Sampled: 9/11/2016

Lab Number:

002A

Date Received: 9/12/2016

Sample Type:

Air, Can

Analysis Date: 9/12/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-1.88 psig

Final Pressure:

-1.88 psig

Canister ID:

14017

12/2		Results MDL RL Results MDL RL
CAS#	Analyte	(ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qua
156-59-2	cis-1,2-Dichloroethene	ND 0.024 0.164 ND 0.0061 0.044 1
127-18-4	Tetrachloroethene	0.81 0.036 0.27 0.12 0.0053 0.04 I
156-60-5	trans-1,2-Dichloroethene	0.59 0.019 0.16 0.15 0.0049 0.04 1
79-01-6	Trichloroethene	0.054 5 0 021 0.21 0.010 5 0.0039 0.04 1
75-01-4	Vinyl Chloride	ND 0.022 (8.10 L) ND 0.088 (0.04 L) 1



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



trans-1,2-Dichloroethene

Trichloroethene

Vinyl Chloride

156-60-5

79-01-6

75-01-4

Date: 29-Sep-16

Client:	TETRA TECH	
Project:	GRAND RAPIDS EMERGENCY RESP	ONSE Work Order No: 16090684
Sample Identifica	tion GRPCE-31-OA	Date Sampled: 9/11/2016
Lab Number:	007A	Date Received: 9/12/2016
Sample Type:	Air, Can	Analysis Date: 9/12/2016
Test Method:	EPA Method TO-15A	Analyst: DRS
Initial Pressure:	psig	
Final Pressure:	-1.63 psig	
Canister ID:	14397	
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
TT 71.73 / //	1,2-Dichloroethene rachloroethene	0.27 0.036 0.27 0.040 0.0053 0.04 1

0 019

0 021

0.022

0.040 丁

0.054 3

0.16

0.10 L

0.21 0.010 3



6.0039

ND 0 0088

0.04

0.04

0.044

0.010 5 0.0049

^{--;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve

Site Name	Grand Rapids VI ER	TDD No.	S05-0001-1605-010	
Document Tracking No.	1115C	TOD NO.		
Data Reviewer (signature and date)	Jesaca A. Vickers October 4, 2016	Technical Reviewer (signature and date)	Hang N. Elis III	
Laboratory Report No.	16090873	Laboratory	Bureau Veritas/Novi, MI	
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15		
Samples and Matrix Eight air samples (including a field duplicate)				
Field Duplicate Pairs GRPCE-28-IA-GRPCE-28-		-IA-DP		
Field Blanks	None			

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Y	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrum	Instrument Performance Checks:				
Within Exceedance/Notes					
Criteria		Exceedance/ Notes			
Υ					
Initial C	Initial Calibration:				

Initial Calibration:

Within Criteria	Exceedance/Notes
Υ	

Continuing Calibration:

Within Criteria	Exceedance/Notes
Υ	

Calibration Verification:

Within Criteria	Exceedance/Notes
NA	

Method blanks:

Within Criteria	Exceedance/Notes
Υ	

Field blanks:

Within Criteria	Exceedance/Notes
NA	



Interference Check Sam	iples (ICS)) (ICP	metals	only):
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Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	



	EPA REGION 5 START CONTRACT
Field duplicates:	
Within	Exceedance/Notes
Criteria	
Y	
LCSs/LCSDs:	
Within	Fuencial and Alleton
Criteria	Exceedance/Notes
Υ	
Sample dilutions:	
Within	Formation of Makes
Criteria	Exceedance/Notes
NA	
Re-extraction and reanalysis:	
Within	
Criteria	Exceedance/Notes
NA	
Second column confirmation (GC and H	PLC analyses only):
Within	
Criteria	Exceedance/Notes
NA	
Internal Standards:	
Within	
Criteria	Exceedance/Notes



Target analyte identification	Target	analy	vte i	iden	tifica	ition
-------------------------------	--------	-------	-------	------	--------	-------

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	The laboratory qualified results between the RL and method detection limit as estimated (J).

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

Other labe	
Within	Even adams / Nintes
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:

1	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.
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.





Date: 15-Sep-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16090873

Sample Identification GRPCE-29-IA-1

Date Sampled: 9/14/2016

Lab Number:

001A

Date Received: 9/14/2016

Sample Type:

Air, Can

Analysis Date: 9/14/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-2.13 psig

Final Pressure:

-2.13 psig

Canister ID:

14590

CAS#	Analyte		MDL ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	0 040 J	0.024	0.16	0.010 J	0061	0.04	1	1
127-18-4	Tetrachloroethene	0.34	0.036	0.27	0.050	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	0.040 3	0.019	0.16	0.010 3	0 0049	0.04	1	- 1
79-01-6	Trichloroethene	0 054 3	0 021	0.21	0.010 3	0.0039	0.04	1	- 1
75-01-4	Vinyl Chloride	ND-	0.022	0.10	D MB	0 0088	0.04	01	



--; Information not available or not applicable.

ND: Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Date: 15-Sep-16

Date Received: 9/14/2016

Analysis Date: 9/14/2016

Analyst: DRS

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16090873

Sample Identification GRPCE-29-1A- 2) Date Sampled: 9/14/2016

Lab Number: 002A

Sample Type: Air, Can

Test Method: EPA Method TO-15A

-1.92 psig

Initial Pressure: -1.92 psig

Canister ID: 14622

Final Pressure:

CAS#	Analyte		MDL ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	(0.040 J	0 024	0.16	0.0103	0061	0.04	1	1
127-18-4	Tetrachloroethene	0.27	0.036	0.27	0.040	.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	0.040 3	0 019	0.16	0.010 3	0049	0.04	1	- 1
79-01-6	Trichloroethene	0.054	0 021	0.21	0.010	0.0039	0.04	- 1	
75-01-4	Vinyl Chloride	MT	0.022	0.10	ND ND	0.0088	(0.04L	1	



-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL, Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Sample Identification GRPCE-28-IA-

Date: 15-Sep-16

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16090873

Lab Number:

003A

Date Sampled: 9/14/2016

Air, Can

Date Received: 9/14/2016

Sample Type: Test Method:

EPA Method TO-15A

Analysis Date: 9/15/2016 Analyst: DRS

Initial Pressure:

-1.90 psig

Final Pressure:

-1.90 psig

Canister ID:

14006

CAS#	Analyte		IDL g/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	(0 040 J	0.024	0.16	0.010 3	0061	0.04	1	V
127-18-4	Tetrachloroethene	0.88	0.036	0.27	0.13	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	8.2	0.019	0.16	2.1	0.0049	0.04	1	
79-01-6	Trichlorocthene	0 054 丁	0 021	0.21	0.0103	h 0039	0.04	1	1
75-01-4	Vinyl Chloride	ND	0.022	0.10	U ND	0 0088	0.04	0	



- Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Date: 15-Sep-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16090873

Sample Identification GRPCE-28-IA- (BASEMENT) Date Sampled: 9/14/2016

Lab Number: 004A

Date Received: 9/14/2016

Sample Type: Air, Can Analysis Date: 9/15/2016

Test Method: EPA Method TO-15A Analyst: DRS
Initial Pressure: -1.21 psig

Final Pressure: -1.21 psig
Canister ID: 14207

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF	Qual
156-59-2	cis-1,2-Dichloroethene	0.040 J 0 024 0.16 0.010 J 0061 0.04 1	1
127-18-4	Tetrachloroethene	0.95 0.036 0.27 0.14 0.0053 0.04 1	
156-60-5	trans-1,2-Dichloroethene	11 0.019 0.16 2.7 0.0049 0.04 1	
79-01-6	Trichlorocthene	0 054 3 0 021 0.21 0.010 0 0039 0.04 1	1
75-01-4	Vinyl Chloride	ND 0 022 0.10u ND 0 0088 0.04u 1	



^{-;} Information not available or not applicable.

ND: Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL, Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E. Value exceeds linear range of calibration curve



Date: 15-Sep-16

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16090873

Sample Identification GRPCE-28-IA-1 (BASEMENT)-DP

Date Sampled: 9/14/2016

Date Received: 9/14/2016

Lab Number: Sample Type: 005A Air, Can

Analysis Date: 9/15/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-1.52 psig

Final Pressure:

-1.52 psig

Canister ID:

14077

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qua
156-59-2	cis-1,2-Dichloroethene	ND 0.024 (0.16 W ND 0.0061 (0.04 W)1
127-18-4	Tetrachloroethene	0.95 0.036 0.27 0.14 0.0053 0.04 1
156-60-5	trans-1,2-Dichlorocthene	9.9 0.019 0.16 2.5 0.0049 0.04 1
79-01-6	Trichloroethene	0.054 0.021 0.21 0.010 0.0039 0.04 1
75-01-4	Vinyl Chloride	NO 0.022 0.104 NB 0 0088 0.044 1



General Notes and Qualifiers:

-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL: Report Limit

J: Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R, RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Sample Identification GRPCE-28-IA

Date: 15-Sep-16

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16090873

Date Sampled: 9/14/2016

Lab Number:

006A

Sample Type:

Air, Can

Date Received: 9/14/2016

Test Method:

EPA Method TO-15A

Analysis Date: 9/15/2016 Analyst: DRS

Initial Pressure:

-1.23 psig

Final Pressure:

-1.23 psig

Canister ID:

14611

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m²) (ug/m²) (ug/m²) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 0.16 W ND 0 0061 (0.04 W)
127-18-4	Tetrachloroethene	0.88 0.036 0.27 0.13 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	6.3 0.019 0.16 1.6 0.0049 0.04 1
79-01-6	Trichloroethene	0.11 0.021 0.21 0.020 0.0039 0.04 1 /
75-01-4	Vinyl Chloride	ND 0.022 (0.10 U) ND 0.0088 (0.04 U) 1



ND: Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



trans-1,2-Dichloroethenc

Trichloroethene

Vinyl Chloride

156-60-5

79-01-6

75-01-4

Date: 15-Sep-16

Client:	TETRA TECH
Project:	GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16090873
Sample Identi	fication GRPCE-28-IA-BASEMENT) Date Sampled: 9/14/2016
Lab Number:	007A Date Received: 9/14/2016
Sample Type:	Air, Can Analysis Date: 9/15/2016
Test Method:	EPA Method TO-15A Analyst: DRS
Initial Pressu	e: -2.03 psig
Final Pressur	: -2.03 psig
Canister ID:	14140
CAS#	Results MDL RL Results MDL RL Analyte (ug/m²) (ug/m²) (ug/m²) (ppbV) (ppbV) DF Qua
156-59-2 127-18-4	cis-1,2-Dichloroethene 0.040

12

0 054 5

0.019

0 021

0 022

0.16

0.21

3.1

0.010

0.10 U ND 0.0088



.0049

0 0039

0.04

0.04

(0.04 L

-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL: Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Date: 15-Sep-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16090873

Sample Identification GRPCE-32-OA

Date Sampled: 9/14/2016

Lab Number:

008A

Date Received: 9/14/2016

Sample Type:

Air, Can

Date Received: 9/14/2016
Analysis Date: 9/15/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-1.30 psig

Final Pressure:

-1.30 psig

Canister ID:

14009

Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m²) (ppbV) (ppbV) (ppbV) DF Qual
cis-1,2-Dichloroethene	ND 0.024 0.164 ND 0.0061 0.044 1
Tetrachloroethene	0.20 3 0.036 0.27 0.030 3 0.0053 0.04 1
trans-1,2-Dichloroethene	ND 0.019 0.16 W NO 0.0049 0.044 V
Trichloroethene	0.021 0.21 ND 0.0039 0.04
Vinyl Chloride	NO 0.022 0.10 NO 0.0088 0.04
	cis-1,2-Dichloroethene Tetrachloroethene trans-1,2-Dichloroethene Trichloroethene



RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve

Site Name	Grand Rapids VI ER	TDD No.	S05-0001-1605-010
Document Tracking No.	1115D	IDD NO.	303-0001-1603-010
Data Reviewer (signature and date)	Jeoaca A. Vickero October 4, 2016	Technical Reviewer (signature and date)	Hang N. Ellis III 5 October 2016
Laboratory Report No.	16090874	Laboratory	Bureau Veritas/Novi, MI
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15	
Samples and Matrix	One air sample		
Field Duplicate Pairs	None		
Field Blanks	None		

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrum	Instrument Performance Checks:		
With		Exceedance/Notes	
Criter	ria	Exceedance/Notes	
Υ			
Initial C	Initial Calibration:		

Initial Calibration:

Within Criteria	Exceedance/Notes
Υ	

Continuing Calibration:

Within Criteria	Exceedance/Notes
Υ	

Calibration Verification:

Within Criteria	Exceedance/Notes
NA	

Method blanks:

Within Criteria	Exceedance/Notes
Υ	

Field blanks:

Within Criteria	Exceedance/Notes
NA	



Interference Check Sam	iples (ICS)) (ICP	metals	only):
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Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

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
NA	
LCSs/LCSDs:	
Within Criteria	Exceedance/Notes
Υ	
Sample dilution	ns:
Within Criteria	Exceedance/Notes
NA	
Re-extraction a	nd reanalysis:
Within Criteria	Exceedance/Notes
NA	
Second column	confirmation (GC and HPLC analyses only):
Within Criteria	Exceedance/Notes
NA	
Internal Standa	ırds:
Within Criteria	Exceedance/Notes



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		,		••••	

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Y	

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

Other labe					
Within	Even dones /Notes				
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:

1	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.
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.





Date: 16-Sep-16

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16090874

Sample Identification GRPCE-04-IA-1

Date Sampled: 9/13/2016

Lab Number:

001A

Date Received: 9/14/2016

Sample Type:

Air, Can

Test Method:

EPA Method TO-15A

Analysis Date: 9/15/2016 Analyst: DRS

Initial Pressure:

-1.97 psig

Final Pressure:

-1.97 psig

Canister ID:

14630

				(ppbV)	(ppbV)	DF	Qual
0.20	0.024	0.16	0.050	0.0061	0.04	1	
1.2	0.036	0.27	0.17	0.0053	0.04	1	
0.24	0.019	0.16	0.060	0.0049	0.04	1	
0.27	0.021	0.21	0.050	0.0039	0.04	1	
0.13	0.022	0.10	0.050 /	0.0088	0.04	1	
	COMPOUND.	C1700 1 1 2477 P. S					



MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve

Site Name Grand Rapids VI ER		TDD No.	S05-0001-1605-010		
Document Tracking No.	1115E	IDD NO.	202-0001-1002-010		
Data Reviewer (signature and date)	2		Hang N. Ellis III 5 October 2016		
Laboratory Report No.	16091215	Laboratory	Bureau Veritas/Novi, MI		
Analyses	Volatile organic compounds (VOCs) by EPA Method TO-15				
Samples and Matrix	Eight air samples (including a field duplicate)				
Field Duplicate Pairs	GRPCE-29-IA-BASEMENT)/GRPCE-29-IA-BASEMENT)-DP				
Field Blanks None					

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrum	Instrument Performance Checks:		
With		Exceedance/Notes	
Criter	ria	Exceedance/Notes	
Υ			
Initial Calibration:			

Initial Calibration:

Within Criteria	Exceedance/Notes
Υ	

Continuing Calibration:

Within Criteria	Exceedance/Notes
Υ	

Calibration Verification:

Within Criteria	Exceedance/Notes
NA	

Method blanks:

Within Criteria	Exceedance/Notes
Υ	

Field blanks:

Within Criteria	Exceedance/Notes
NA	



Interference Check Sam	iples (ICS)) (ICP	metals	only):
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Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	



	EPA REGION 5 START CONTRACT
Field duplicates:	
Within	Exceedance/Notes
Criteria	
Y	
LCSs/LCSDs:	
Within	Exceedance/Notes
Criteria	Exceedance/Notes
Y	
Sample dilutions:	
Within	Fuses deves /Notes
Criteria	Exceedance/Notes
NA	
Re-extraction and reanalysis:	
Within	Farmandaman (Natara
Criteria	Exceedance/Notes
NA	
Second column confirmation (GC and H	PLC analyses only):
Within	
Criteria	Exceedance/Notes
NA	
Internal Standards:	
Within	
Criteria	Exceedance/Notes



Target analyte identification	Target	analy	vte i	iden	tifica	ition
-------------------------------	--------	-------	-------	------	--------	-------

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	The laboratory qualified results between the RL and method detection limit as estimated (J).

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

Other labe	
Within	Exceedance/Notes
Criteria	
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:

1	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample.
,	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.





Date: 21-Sep-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16091215

Sample Identification GRPCE-29-IA-

Date Sampled: 9/20/2016

Lab Number:

006A

Date Received: 9/20/2016

Sample Type:

Air, Can

Analysis Date: 9/20/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-1.18 psig

Final Pressure:

-1.18 psig

Canister ID:

14403

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qua
156-59-2	cis-1,2-Dichloroethene	ND 0.024 0.164 NB 0.0061 0.044 1
127-18-4	Tetrachloroethene	0.95 0.036 0.27 0.14 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	10 0.019 0.16 2.6 0.0049 0.04 1
79-01-6	Trichloroethene	0.0543 0.021 0.21 0.010 3 0.0039 0.04 1
75-01-4	Vinyl Chloride	ND 0.022 (0.104) ND 0.0088 (0.044) 1

BASEMENT)



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL: Report Limit

J: Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T: Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 21-Sep-16

Client: **TETRA TECH**

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16091215

Sample Identification GRPCE-29-1A-

Date Sampled: 9/20/2016

Lab Number:

007A

Date Received: 9/20/2016

Sample Type:

Air, Can

Test Method:

EPA Method TO-15A

Analysis Date: 9/20/2016 Analyst: DRS

Initial Pressure:

-3.36 psig

Final Pressure:

-3.36 psig

Canister ID:

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF (Qual
156-59-2	cis-1,2-Dichloroethene	NB 0.024 0.164 ND 0.0061 0.044 1	
127-18-4	Tetrachloroethene	1.0 0.036 0.27 0.15 0.0053 0.04 1	
156-60-5	trans-1,2-Dichloroethene	12 0.019 0.16 3.1 0.0049 0.04 1	
79-01-6	Trichloroethene	0.054 3 0.021 0.21 0.010 3.0039 0.04 1	8
75-01-4	Vinyl Chloride	ND 0.022 (0.104) ND 0.0088 (0.044)	



MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E. Value exceeds linear range of calibration curve



Date: 21-Sep-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16091215

Sample Identification GRPCE-29-IA-

MAIN)

Date Sampled: 9/20/2016

Lab Number:

005A

Date Received: 9/20/2016

Sample Type:

Air, Can

Analysis Date: 9/20/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-3.09 psig

Final Pressure:

-3.09 psig

Canister ID:

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qua
156-59-2	cis-1,2-Dichloroethene	ND 0.024 (0.164 ND 0.0061 (0.044)
127-18-4	Tetrachloroethene	0.95 0.036 0.27 0.14 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	5.7 0.019 0.16 1.5 0.0049 0.04 1
79-01-6	Trichloroethene	0.11 3 0.021 0.21 0.020 3 0.0039 0.04 1 /
75-01-4	Vinyl Chloride	NO 0.022 0.104 NO 0.0088 1.044 1



MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 21-Sep-16

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16091215

Sample Identification GRPCE-29-IA-

Date Sampled: 9/20/2016

Lab Number:

004A

Date Received: 9/20/2016

Sample Type:

Air, Can

Analysis Date: 9/20/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-2.96 psig

Final Pressure:

-2.96 psig

Canister ID:

14570

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1.2-Dichloroethene	0.079	0 024	0.16	0 020 J	0 0061	0.04	1	1
127-18-4	Tetrachloroethene	1.2	0.036	0.27	0.17	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	9.6	0.019	0.16	2.4	0.0049	0.04	1	
79-01-6	Trichloroethene	0.054 3	0.021	0.21	0.010	0 0039	0.04	1	1
75-01-4	Vinyl Chloride	Q14	0.022	0.10	H CL	88000	(0.04 L	1(1	



J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S; Spike Recovery butside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E: Value exceeds linear range of calibration curve



Date: 21-Sep-16

Client: **TETRA TECH** Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16091215

Sample Identification GRPCE-29-IA-

Date Sampled: 9/20/2016

Lab Number:

Sample Type:

003A

Date Received: 9/20/2016

Test Method:

Analysis Date: 9/20/2016

EPA Method TO-15A

Analyst: DRS

Initial Pressure: Final Pressure:

-2.33 psig -2.33 psig

Air, Can

Canister ID:

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qua
156-59-2	cis-1.2-Dichloroethene	ND 0.024 0.164 ND 0 0061 0.044 1
127-18-4	Tetrachloroethene	1.0 0.036 0.27 0.15 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	6.7 0.019 0.16 1.7 0.0049 0.04 1
79-01-6	Trichlorocthene	0.054 3 0.021 0.21 0.010 3 0.0039 0.04 1 /
75-01-4	Vinyl Chloride	ND 0.022 0.104 ND 0.0088 0.0441



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J: Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B: Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 21-Sep-16

Client: TETRA TECH

Canister ID:

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16091215

Sample Identification GRPCE-30-IA-1)

Date Sampled: 9/20/2016

Lab Number: 001A Date Received: 9/20/2016

Sample Type: Air, Can Analysis Date: 9/20/2016

Test Method: EPA Method TO-15A Analyst: DRS
Initial Pressure: -2.85 psig

Final Pressure: -2.85 psig

13946

Results MDL RL Results MDL RL (ug/m^3) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual CAS# Analyte 156-59-2 cis-1.2-Dichloroethene 0.52 0.024 0.16 0.13 0.0061 0.04 0.036 0.27 0.17 0.0053 0.04 1.2 127-18-4 Tetrachloroethene 0.070 0.019 0.16 0.0049 0.04 156-60-5 trans-1,2-Dichloroethene 0.28 0.0039 0.04 79-01-6 Trichloroethene 0.32 0.021 0.21 0.060 0.022 0.10 0.050 0.0088 0.04 0.13 Vinyl Chloride 75-01-4



^{-:} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 21-Sep-16

Analyst: DRS

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16091215

Sample Identification GRPCE-30-

Lab Number: 002A

002A Date Received: 9/20/2016

Sample Type: Air, Can

Test Method:

r, Can Analysis Date: 9/20/2016

Initial Pressure: -2.55 psig

Final Pressure: -2.55 psig

EPA Method TO-15A

Canister ID: 13987

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qua
156-59-2	cis-1,2-Dichloroethene	ND 0.024 0.16 U ND 0.0061 (0.04 U) 1
127-18-4	Tetrachloroethene	0.54 0.036 0.27 0.080 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	0.36 0.019 0.16 0.090 0.0049 0.04 1
79-01-6	Trichloroethene	0.054 3 0.021 0.21 0.010 3 0.0039 0.04 1
75-01-4	Vinyl Chloride	MD 0.022 0.10 0.0088 0.04 1



^{-;} Information not available or not applicable.

ND: Less than the indicated limit of detection (LOD)

RL: Report Limit

J; Value is between the MDL and Reporting Limit, estimated \boldsymbol{r}

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R: RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 21-Sep-16

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16091215

Date Sampled: 9/20/2016

Date Received: 9/20/2016

Analysis Date: 9/20/2016

Analyst: DRS

Sample Identification GRPCE-33-OA

008A

Lab Number:

.....

Sample Type:

Air, Can

Test Method:

EPA Method TO-15A

Initial Pressure: Final Pressure: -3.05 psig

Canister ID:

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qua
156-59-2	cis-1,2-Dichloroethene	ND 0.024 0.164 ND 0 0061 0.044 1
127-18-4	Tetrachloroethene	0.47 0.036 0.27 0.070 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	0.040 3 0.019 0.16 0.010 3 0.0049 0.04 1
79-01-6	Trichloroethene	0.054 3 0.021 0.21 0.010 3 0 0039 0.04 1
75-01-4	Vinyl Chloride	ND 0.022 0.100 ND 0.088 0.040 1



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve

Site Name	Grand Rapids VI ER	TDD No.	S05-0001-1605-010	
Document Tracking No.	1115F	IDD NO.	303-0001-1603-010	
Data Reviewer (signature and date)	Jesaca A. Vickers October 4, 2016	Technical Reviewer (signature and date)	Hang N. Ellis III 5 October 2016	
Laboratory Report No.	16091662	Laboratory	Bureau Veritas/Novi, MI	
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15		
Samples and Matrix	Eight air samples (including a field duplicate	e)		
Field Duplicate Pairs	GRPCE-29-IA-BASEMENT)/GRPCE	-29-IA-BASEMEN	T)-DP	
Field Blanks	None			

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrum	nent	Performance Checks:		
With		Exceedance/Notes		
Criter	ria	Exceedance/Notes		
Υ				
Initial (^alih	ration		

Initial Calibration:

Within Criteria	Exceedance/Notes
Υ	

Continuing Calibration:

Within Criteria	Exceedance/Notes
Υ	

Calibration Verification:

Within Criteria	Exceedance/Notes
NA	

Method blanks:

Within Criteria	Exceedance/Notes
Υ	

Field blanks:

Within Criteria	Exceedance/Notes
NA	



Interference Check Sam	iples (ICS)) (ICP	metals	only):
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Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	



EPA REGION 5 START CONTRACT		
Field duplicates:		
Within	Exceedance/Notes	
Criteria		
Υ		
LCSs/LCSDs:		
Within	Fuencial and Alleton	
Criteria	Exceedance/Notes	
Υ		
Sample dilutions:		
Within	Formation of Makes	
Criteria	Exceedance/Notes	
NA		
Re-extraction and reanalysis:		
Within		
Criteria	Exceedance/Notes	
NA		
Second column confirmation (GC and H	PLC analyses only):	
Within		
Criteria	Exceedance/Notes	
NA		
Internal Standards:		
Within		
Criteria	Exceedance/Notes	



Target analyte identification	Target	analy	vte i	iden	tifica	ition
-------------------------------	--------	-------	-------	------	--------	-------

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	The laboratory qualified results between the RL and method detection limit as estimated (J).

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

Other labe	
Within	Exceedance/Notes
Criteria	
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:

1	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.
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.





Vinyl Chloride

Date: 28-Sep-16

Client:		TETRA TECH									
Project:		GRAND RAPIDS EMERGENCY RESE	PONSE				Work Or	der No:	1609166	2	
Sample Ide	entificati	on GRPCE-30-IA-BASEMEN	IT)				Date Sa	mpled:	9/27/201	6	
Lab Numbe	er:	006A					Date Re	ceived:	9/27/201	6	
Sample Ty	pe:	Air, Can					Analys	is Date:	9/27/201	6	
Test Metho	od:	EPA Method TO-15A					A	nalyst:	DRS		
Initial Pres	ssure:	-2.08 psig									
Final Press	sure:	-2.08 psig									
Canister II	D:	14075									
CAS#		Analyte		Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,	2-Dichloroethene		ND	0.024	0.16	14 (P	0 0061	0.040	DI	
127-18-4	Tetra	chloroethene		0.68	0.036	0.27	0.10	0.0053	0.04	1	
156-60-5		-1,2-Dichloroethene		8.6	0.019		The Party of the P	0.0049		1	
79-01-6	Trich	loroethene		0.054	0 021	0.21	0.010	0.0039	0.04	1	1



0 04 U

ND- 0 0088 (

75-01-4

STATE OF

0.022

^{--,} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r T; Tentatively Identified Compound (TIC)

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

E; Value exceeds linear range of calibration curve



Date: 28-Sep-16

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16091662

Sample Identification GRPCE-30-IA-

Date Sampled: 9/27/2016

Lab Number:

005A

Date Received: 9/27/2016

Sample Type:

Air, Can

Test Method:

EPA Method TO-15A

Analysis Date: 9/27/2016 Analyst: DRS

Initial Pressure:

-1.52 psig

Final Pressure:

-1.52 psig

Canister ID:

Camster 10	. 14020	Results MDL RL Results MDL RL
CAS#	Analyte	(ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 (0164) ND 0 0061 (0.044) 1
127-18-4	Tetrachloroethene	0.61 0.036 0.27 0.090 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	6.0 0.019 0.16 1.5 0.0049 0.04 1
79-01-6	Trichloroethene	0.054 \$ 0.021 0.21 0.010 \$ 0.0039 0.04 1 1
75-01-4	Vinyl Chloride	ND 0.022 ND 0.0088 (0.04 U) 1



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 28-Sep-16

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16091662

Date Sampled: 9/27/2016

Lab Number:

007A

Sample Identification GRPCE-30-IA-

Sample Type:

Air, Can

Date Received: 9/27/2016

Test Method:

EPA Method TO-15A

Analysis Date: 9/27/2016

Analyst: DRS

Initial Pressure:

-2.05 psig -2.05 psig

Final Pressure: Caulatan ID.

Canister ID:	: 140/8	
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Q
156-59-2	cis-1,2-Dichloroethenc	ND 0.024 (0.164) ND 0.0061 (0.044) 1
127-18-4	Tetrachloroethene	0.68 0.036 0.27 0.10 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethenc	6.9 0.019 0.16 1.7 0.0049 0.04 1
79-01-6	Trichloroethene	0.054 7 0 021 0.21 0.010 7 0.0039 0.04 1
75-01-4	Vinyl Chloride	ND 0.022 0.10 ND 0.0088 (0.04 L) 1



^{-.} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



003A

Date: 28-Sep-16

Date Received: 9/27/2016

Client: TETRA TECH

GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16091662 Project:

Sample Identification GRPCE-30-IA-Date Sampled: 9/27/2016

Analysis Date: 9/27/2016 Sample Type: Air, Can

EPA Method TO-15A Analyst: DRS Test Method:

Initial Pressure: -1.87 psig

Final Pressure: -1.87 psig Canister ID: 14291

Lab Number:

MDL RL Results MDL RL. Results (ppbV) (ug/m³) (ug/m3) (ug/m³) (ppbV) (ppbV) DF Qual CAS# Analyte 0.04 4 0.164 ND-0 0061 156-59-2 cis-1,2-Dichloroethene 0.024 0.036 0.27 0.090 0.0053 0.04 127-18-4 Tetrachloroethene 0.61 0.11 0.0049 0.04 0.019 0.16 156-60-5 trans-1.2-Dichloroethene 0.44 0.054 J 0.021 0.21 0.010 3 0 0039 0.04 79-01-6 Trichlorocthene 0.022 (0.04 L ND 0.104 ND 0 0088 75-01-4 Vinyl Chloride



^{--;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 28-Sep-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16091662

Sample Identification GRPCE-30-IA-

Date Sampled: 9/27/2016

Lab Number: 004A

Date Received: 9/27/2016

Sample Type: Air, Can

Analysis Date: 9/27/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-2.35 psig

Final Pressure:

-2.35 psig

Canister ID:

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 0.16 ND 0.0061 0.04 1
127-18-4	Tetrachloroethene	0.61 0.036 0.27 0.090 0.0053 0.04 1
156-60-5	trans-1.2-Dichloroethene	0.48 0.019 0.16 0.12 0.0049 0.04 1
79-01-6	Trichloroethene	0.054 3 0.021 0.21 0.010 3 0.0039 0.04 1 /
75-01-4	Vinyl Chloride	ND 0.022 (0.10 U) ND 0.0088 (0.04 U) 1



J; Value is between the MDL and Reporting Limit, estimated r

MDL: Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 28-Sep-16

Client: TETRA TECH

GRAND RAPIDS EMERGENCY RESPONSE Project:

Work Order No: 16091662

Sample Identification GRPCE-31-IA-1)

Date Sampled: 9/27/2016

Lab Number:

Date Received: 9/27/2016

Sample Type:

001A Air, Can

Analysis Date: 9/27/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-2.44 psig

Final Pressure:

-2.44 psig

Canister ID:

0.00		Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF	0
CAS#	Analyte	(ug/m^3) (ug/m^3) (ug/m^3) $(ppbV)$ $(ppbV)$ $(ppbV)$ $(ppbV)$	Qua
156-59-2	cis-1,2-Dichloroethene	0.20 0.024 0.16 0.050 0.0061 0.04 1	
127-18-4	Tetrachloroethene	0.61 0.036 0.27 0.090 0.0053 0.04 1	
156-60-5	trans-1,2-Dichloroethene	0.12 5 0 019 0.16 0.030 5 0 0049 0.04 1	1
79-01-6	Trichloroethene	0.16 5 0 021 0.21 0.030 5 0.0039 0.04 1	1
75-01-4	Vinyl Chloride	MD 0 022 0.10 U ND 0 0088 0 04U 1	



^{-;} Information not available or not applicable.

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 28-Sep-16

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16091662

Sample Identification GRPCE-31-IA-Lab Number:

Date Sampled: 9/27/2016

002A

Date Received: 9/27/2016

Sample Type:

Air, Can

Analysis Date: 9/27/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

Final Pressure:

-3.43 psig -3.43 psig

Canister ID:

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qu
156-59-2	cis-1,2-Dichloroethene	ND 0.024 (0.164) ND 0.0061 (0.044)
127-18-4	Tetrachloroethene	0.75 0.036 0.27 0.11 0.0053 0.04 1
156-60-5	trans-1.2-Dichloroethene	0.24 0.019 0.16 0.060 0.0049 0.04 1
79-01-6	Trichloroethene	0.054 3 0.021 0.21 0.010 3 0.0039 0.04 1
75-01-4	Vinyl Chloride	ND 0.022 0.10 ND 0.0088 (0.04 U)



RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 28-Sep-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16091662

Sample Identification GRPCE-34-OA-Date Sampled: 9/27/2016

008A Date Received: 9/27/2016 Lab Number:

Sample Type:

Air, Can Analysis Date: 9/27/2016

Test Method: EPA Method TO-15A

Analyst: DRS

Initial Pressure: -1.51 psig Final Pressure: -1.51 psig

Canister IL	14580	
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	NB 0.024 0.164 NB 0.0061 0.044 1
127-18-4	Tetrachloroethene	0.34 0.036 0.27 0.050 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	NB 0.019 0.164 ND 0.0049 0.044 1
79-01-6	Trichloroethene	0.054 0.021 0.21 0.010 0.0039 0.04 1
75-01-4	Vinyl Chloride	NB 0.022 0.104 NB 0.0088 0.044 1



^{-:} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r T; Tentatively Identified Compound (TIC)

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S: Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

E; Value exceeds linear range of calibration curve



October 10, 2016

Betsy Nightingale On-Scene Coordinator U.S. Environmental Protection Agency Region 5 9311 Groh Road Grosse Ile, MI 48138-1697

Subject: Data Validation Reports

Grand Rapids VI ER

EPA Contract No. EP-S5-13-01

Technical Direction Document No. S05-0001-1605-010

Document Tracking No. 1121

Dear Ms. Nightingale:

Tetra Tech Inc. (Tetra Tech) is submitting these Data Validation Reports for 19 air samples (including a field duplicate) collected at the Grand Rapids VI ER site. The samples were collected on September 29, 2016 and October 2, 2016 and were analyzed for volatile organic compounds by ALS Environmental Laboratories and Bureau Veritas Laboratories. Tetra Tech received the final data on October 7, 2016.

Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines* (NFG) for Superfund Organic Methods Data Review (August 2014).

No rejection of results was required for these data sets. The data is usable as qualified based on the findings of this validation effort.

If you have any questions regarding these Data Validation Reports, please call me at (662) 681-5727.

Sincerely,

Jessica A. Vickers START Chemist

Enclosure

cc: Kevin Scott, Tetra Tech Program Manager

Michael Browning, Tetra Tech Project Manager

TDD File

Jesaca a Vickers

ATTACHMENT 1

DATA VALIDATION REPORTS ALS ENVIRONMENTAL SDG P1604646 BUREAU VERITAS SDG 16100012

Site Name	Grand Rapids VI ER		TDD No		SOE 0001 160E 010	
Document Tracking No.	1121A		TDD No.		S05-0001-1605-010	
Data Reviewer (signature and date)	Jesaca A. Vickers October 10, 2016		Technical Rev		Hang N. Elis III 10 October 2016	
Laboratory Report No.	P1604646		Laboratory		ALS Laboratories/Simi Valley, CA	
Analyses	Volatile organic compounds (VOCs) by	EPA N	Nethod TO-15			
Samples and Matrix	Twelve air samples (including a field d	uplicat	te)			
Field Duplicate Pairs	GRPCE-01-IA- (Basement)/	-IA- (Basement)/GRPCE		(Base	ement)-DP	
Field Blanks	None		-	•		

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrument Performance Checks:	
Within	
Criteria	Exceedance/Notes
Υ	
,	
Initial Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Y	
Continuing Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/Notes
Y	
Calibration Verification:	
Within	Exceedance/Notes
Criteria	Exceedance/Notes
Y	
Method blanks:	
Within	Evenedones /Netes
Criteria	Exceedance/Notes
Υ	

Field blanks:

Vithin riteria	Exceedance/Notes
NA	



Interference Check Sam	iples (ICS)) (ICP	metals	only):
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Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

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
Υ	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Υ	

Sample dilutions:

Within Criteria	Exceedance/Notes
	1.62x: VOCs for GRPCE-01-IA-1232 Euclid (Basement)
	1.63x: VOCs for GRPCE-01-IA-1232 Euclid (Main)
	1.65x: VOCs for GRPCE-01-IA- (Main)
	1.66x: VOCs for GRPCE-01-IA- (Basement)
	1.70x: VOCs for GRPCE-01-IA- (Main) and GRPCE-01-IA- (Basement)
Υ	1.71x: VOCs for GRPCE-01-IA- (Main)
	1.74x: VOCs for GRPCE-01-SS-
	8.65x: VOCs for GRPCE-01-SS-
	23.5x: VOCs except tetrachloroethene for GRPCE-01-SS-1232 Euclid
	49.4x: VOCs for GRPCE-01-SS-
	51.0x: tetrachloroethene for GRPCE-01-SS-1232 Euclid

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
Y	

Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	All results were either non-detect or above RL

Tentatively identified compounds:

	y ruentinou compoundo.
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	



Other [specify]:

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.



Samp_No		Analyte	Result Lab_Qualifier	MDL	RL Units	Val_Result Val_Qualifier
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.043 U	0.039	0.043 ppbV	0.043 U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	0.049	0.018	0.025 ppbV	0.049
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.043 U	0.039	0.043 ppbV	0.043 U
GRPCE-01-IA-	(Basement)	Trichloroethene (TCE)	0.032 U	0.028	0.032 ppbV	0.032 U
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.067 U	0.063	0.067 ppbV	0.067 U
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.17 U	0.16	0.17 ug/m3	0.17 U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	0.33	0.12	0.17 ug/m3	0.33
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.17 U	0.15	0.17 ug/m3	0.17 U
GRPCE-01-IA-	(Basement)	Trichloroethene (TCE)	0.17 U	0.15	0.17 ug/m3	0.17 U
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.17 U	0.16	0.17 ug/m3	0.17 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.043 U	0.04	0.043 ppbV	0.043 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	0.051	0.018	0.025 ppbV	0.051
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.043 U	0.039	0.043 ppbV	0.043 U
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.032 U	0.028	0.032 ppbV	0.032 U
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.067 U	0.064	0.067 ppbV	0.067 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.17 U	0.16	0.17 ug/m3	0.17 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	0.35	0.12	0.17 ug/m3	0.35
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.17 U	0.16	0.17 ug/m3	0.17 U
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.17 U	0.15	0.17 ug/m3	0.17 U
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.17 U	0.16	0.17 ug/m3	0.17 U
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.042 U	0.039	0.042 ppbV	0.042 U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	1.1	0.018	0.024 ppbV	1.1
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.042 U	0.038	0.042 ppbV	0.042 U
GRPCE-01-IA-	(Basement)	Trichloroethene (TCE)	0.031 U	0.028	0.031 ppbV	0.031 U
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.065 U	0.062	0.065 ppbV	0.065 U
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.17 U	0.15	0.17 ug/m3	0.17 U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	7.1	0.12	0.17 ug/m3	7.1
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.17 U	0.15	0.17 ug/m3	0.17 U
GRPCE-01-IA-	(Basement)	Trichloroethene (TCE)	0.17 U	0.15	0.17 ug/m3	0.17 U
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.17 U	0.16	0.17 ug/m3	0.17 U
GRPCE-01-IA-	(Basement)-DP	cis-1,2-Dichloroethene	0.042 U	0.038	0.042 ppbV	0.042 U
GRPCE-01-IA-	(Basement)-DP	Tetrachloroethene	1.2	0.018	0.024 ppbV	1.2
GRPCE-01-IA-	(Basement)-DP	trans-1,2-Dichloroethene	0.042 U	0.038	0.042 ppbV	0.042 U

Samp_No		Analyte	Result Lab_Qualifier	MDL	RL Units	Val_Result Val_Qualifier
GRPCE-01-IA-	(Basement)-DP	Trichloroethene (TCE)	0.031 U	0.027	0.031 ppbV	0.031 U
GRPCE-01-IA-	(Basement)-DP	Vinyl Chloride	0.065 U	0.061	0.065 ppbV	0.065 U
GRPCE-01-IA-	(Basement)-DP	cis-1,2-Dichloroethene	0.17 U	0.15	0.17 ug/m3	0.17 U
GRPCE-01-IA-	(Basement)-DP	Tetrachloroethene	8.4	0.12	0.17 ug/m3	8.4
GRPCE-01-IA-	(Basement)-DP	trans-1,2-Dichloroethene	0.17 U	0.15	0.17 ug/m3	0.17 U
GRPCE-01-IA-	(Basement)-DP	Trichloroethene (TCE)	0.17 U	0.15	0.17 ug/m3	0.17 U
GRPCE-01-IA-	(Basement)-DP	Vinyl Chloride	0.17 U	0.16	0.17 ug/m3	0.17 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.043 U	0.039	0.043 ppbV	0.043 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	0.47	0.018	0.025 ppbV	0.47
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.043 U	0.039	0.043 ppbV	0.043 U
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.032 U	0.028	0.032 ppbV	0.032 U
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.067 U	0.063	0.067 ppbV	0.067 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.17 U	0.16	0.17 ug/m3	0.17 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	3.2	0.12	0.17 ug/m3	3.2
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.17 U	0.15	0.17 ug/m3	0.17 U
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.17 U	0.15	0.17 ug/m3	0.17 U
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.17 U	0.16	0.17 ug/m3	0.17 U
GRPCE-01-IA-1232 Eucli	d (Basement)	cis-1,2-Dichloroethene	0.041 U	0.038	0.041 ppbV	0.041 U
GRPCE-01-IA-1232 Eucli	d (Basement)	Tetrachloroethene	0.77	0.017	0.024 ppbV	0.77
GRPCE-01-IA-1232 Eucli	d (Basement)	trans-1,2-Dichloroethene	0.041 U	0.037	0.041 ppbV	0.041 U
GRPCE-01-IA-1232 Eucli	d (Basement)	Trichloroethene (TCE)	0.03 U	0.027	0.03 ppbV	0.03 U
GRPCE-01-IA-1232 Eucli	d (Basement)	Vinyl Chloride	0.063 U	0.06	0.063 ppbV	0.063 U
GRPCE-01-IA-1232 Eucli	d (Basement)	cis-1,2-Dichloroethene	0.16 U	0.15	0.16 ug/m3	0.16 U
GRPCE-01-IA-1232 Eucli	d (Basement)	Tetrachloroethene	5.2	0.12	0.16 ug/m3	5.2
GRPCE-01-IA-1232 Eucli	d (Basement)	trans-1,2-Dichloroethene	0.16 U	0.15	0.16 ug/m3	0.16 U
GRPCE-01-IA-1232 Eucli	d (Basement)	Trichloroethene (TCE)	0.16 U	0.14	0.16 ug/m3	0.16 U
GRPCE-01-IA-1232 Eucli	d (Basement)	Vinyl Chloride	0.16 U	0.15	0.16 ug/m3	0.16 U
GRPCE-01-IA-1232 Eucli	d (Main)	cis-1,2-Dichloroethene	0.041 U	0.038	0.041 ppbV	0.041 U
GRPCE-01-IA-1232 Eucli	d (Main)	Tetrachloroethene	0.57	0.017	0.024 ppbV	0.57
GRPCE-01-IA-1232 Eucli	d (Main)	trans-1,2-Dichloroethene	0.041 U	0.037	0.041 ppbV	0.041 U
GRPCE-01-IA-1232 Eucli	d (Main)	Trichloroethene (TCE)	0.03 U	0.027	0.03 ppbV	0.03 U
GRPCE-01-IA-1232 Eucli	d (Main)	Vinyl Chloride	0.064 U	0.061	0.064 ppbV	0.064 U
GRPCE-01-IA-1232 Eucli	d (Main)	cis-1,2-Dichloroethene	0.16 U	0.15	0.16 ug/m3	0.16 U

Samp_No	Analyte	Result Lab_Qualifier	MDL	RL Units	Val_Result Val_Qualifier
GRPCE-01-IA-1232 Euclid (Ma	in) Tetrachloroethene	3.9	0.12	0.16 ug/m3	3.9
GRPCE-01-IA-1232 Euclid (Ma	in) trans-1,2-Dichloroethene	0.16 U	0.15	0.16 ug/m3	0.16 U
GRPCE-01-IA-1232 Euclid (Ma	in) Trichloroethene (TCE)	0.16 U	0.15	0.16 ug/m3	0.16 U
GRPCE-01-IA-1232 Euclid (Ma	in) Vinyl Chloride	0.16 U	0.15	0.16 ug/m3	0.16 U
GRPCE-01-IA- (Main)	cis-1,2-Dichloroethene	0.042 U	0.038	0.042 ppbV	0.042 U
GRPCE-01-IA- (Main)	Tetrachloroethene	0.93	0.018	0.024 ppbV	0.93
GRPCE-01-IA- (Main)	trans-1,2-Dichloroethene	0.042 U	0.038	0.042 ppbV	0.042 U
GRPCE-01-IA- (Main)	Trichloroethene (TCE)	0.15	0.027	0.031 ppbV	0.15
GRPCE-01-IA- (Main)	Vinyl Chloride	0.065 U	0.061	0.065 ppbV	0.065 U
GRPCE-01-IA- (Main)	cis-1,2-Dichloroethene	0.17 U	0.15	0.17 ug/m3	0.17 U
GRPCE-01-IA- (Main)	Tetrachloroethene	6.3	0.12	0.17 ug/m3	6.3
GRPCE-01-IA- (Main)	trans-1,2-Dichloroethene	0.17 U	0.15	0.17 ug/m3	0.17 U
GRPCE-01-IA- (Main)	Trichloroethene (TCE)	0.81	0.15	0.17 ug/m3	0.81
GRPCE-01-IA-	Vinyl Chloride	0.17 U	0.16	0.17 ug/m3	0.17 U
GRPCE-01-SS-	cis-1,2-Dichloroethene	0.22 U	0.2	0.22 ppbV	0.22 U
GRPCE-01-SS-	Tetrachloroethene	90	0.092	0.13 ppbV	90
GRPCE-01-SS-	trans-1,2-Dichloroethene	0.22 U	0.2	0.22 ppbV	0.22 U
GRPCE-01-SS-	Trichloroethene (TCE)	0.33	0.14	0.16 ppbV	0.33
GRPCE-01-SS-	Vinyl Chloride	0.34 U	0.32	0.34 ppbV	0.34 U
GRPCE-01-SS-	cis-1,2-Dichloroethene	0.87 U	0.8	0.87 ug/m3	0.87 U
GRPCE-01-SS-	Tetrachloroethene	610	0.62	0.87 ug/m3	610
GRPCE-01-SS-	trans-1,2-Dichloroethene	0.87 U	0.79	0.87 ug/m3	0.87 U
GRPCE-01-SS-	Trichloroethene (TCE)	1.7	0.77	0.87 ug/m3	1.7
GRPCE-01-SS-	Vinyl Chloride	0.87 U	0.82	0.87 ug/m3	0.87 U
GRPCE-01-SS-	cis-1,2-Dichloroethene	0.044 U	0.04	0.044 ppbV	0.044 U
GRPCE-01-SS-	Tetrachloroethene	10	0.018	0.026 ppbV	10
GRPCE-01-SS-	trans-1,2-Dichloroethene	0.044 U	0.04	0.044 ppbV	0.044 U
GRPCE-01-SS-	Trichloroethene (TCE)	0.032 U	0.029	0.032 ppbV	0.032 U
GRPCE-01-SS-	Vinyl Chloride	0.068 U	0.065	0.068 ppbV	0.068 U
GRPCE-01-SS-	cis-1,2-Dichloroethene	0.17 U	0.16	0.17 ug/m3	0.17 U
GRPCE-01-SS-	Tetrachloroethene	68	0.13	0.17 ug/m3	68
GRPCE-01-SS-	trans-1,2-Dichloroethene	0.17 U	0.16	0.17 ug/m3	0.17 U
GRPCE-01-SS-	Trichloroethene (TCE)	0.17 U	0.15	0.17 ug/m3	0.17 U

Samp_No	Analyte	Result Lab_Qualifier	MDL	RL Units	Val_Result Val_Qualifier
GRPCE-01-SS-	Vinyl Chloride	0.17 U	0.17	0.17 ug/m3	0.17 U
GRPCE-01-SS-1232 Euclid	cis-1,2-Dichloroethene	0.59 U	0.55	0.59 ppbV	0.59 U
GRPCE-01-SS-1232 Euclid	Tetrachloroethene	340 D	0.54	0.75 ppbV	340
GRPCE-01-SS-1232 Euclid	trans-1,2-Dichloroethene	0.59 U	0.54	0.59 ppbV	0.59 U
GRPCE-01-SS-1232 Euclid	Trichloroethene (TCE)	0.72	0.39	0.44 ppbV	0.72
GRPCE-01-SS-1232 Euclid	Vinyl Chloride	0.92 U	0.88	0.92 ppbV	0.92 U
GRPCE-01-SS-1232 Euclid	cis-1,2-Dichloroethene	2.4 U	2.2	2.4 ug/m3	2.4 U
GRPCE-01-SS-1232 Euclid	Tetrachloroethene	2300 D	3.7	5.1 ug/m3	2300
GRPCE-01-SS-1232 Euclid	trans-1,2-Dichloroethene	2.4 U	2.1	2.4 ug/m3	2.4 U
GRPCE-01-SS-1232 Euclid	Trichloroethene (TCE)	3.9	2.1	2.4 ug/m3	3.9
GRPCE-01-SS-1232 Euclid	Vinyl Chloride	2.4 U	2.2	2.4 ug/m3	2.4 U
GRPCE-01-SS-	cis-1,2-Dichloroethene	1.2 U	1.1	1.2 ppbV	1.2 U
GRPCE-01-SS-	Tetrachloroethene	720	0.53	0.73 ppbV	720
GRPCE-01-SS-	trans-1,2-Dichloroethene	1.2 U	1.1	1.2 ppbV	1.2 U
GRPCE-01-SS-	Trichloroethene (TCE)	1.1	0.82	0.92 ppbV	1.1
GRPCE-01-SS-	Vinyl Chloride	1.9 U	1.8	1.9 ppbV	1.9 U
GRPCE-01-SS-	cis-1,2-Dichloroethene	4.9 U	4.5	4.9 ug/m3	4.9 U
GRPCE-01-SS-	Tetrachloroethene	4800	3.6	4.9 ug/m3	4800
GRPCE-01-SS-	trans-1,2-Dichloroethene	4.9 U	4.5	4.9 ug/m3	4.9 U
GRPCE-01-SS-	Trichloroethene (TCE)	5.7	4.4	4.9 ug/m3	5.7
GRPCE-01-SS-	Vinyl Chloride	4.9 U	4.7	4.9 ug/m3	4.9 U

Site Name	Grand Rapids VI ER	TDD No.	\$05-0001-1605-010
Document Tracking No.	1121B	TOD NO.	303-0001-1603-010
Data Reviewer (signature and date)	Jeoaca A. Vickers October 10, 2016	Technical Reviewer (signature and date)	Hang N. Elis III 10 October 2016
Laboratory Report No.	16100012	Laboratory	Bureau Veritas/Novi, MI
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15	
Samples and Matrix	Seven air samples		
Field Duplicate Pairs	None		
Field Blanks	None		

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection of results was required for this data set. The data is usable as qualified based on the findings of this validation effort.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrument Performance Checks:

Within Criteria	Exceedance/Notes
Υ	

Initial Calibration:

Within Criteria	Exceedance/Notes
Y	

Continuing Calibration:

Within Criteria	Exceedance/Notes
Υ	

Calibration Verification:

Within Criteria	Exceedance/Notes
NA	

Method blanks:

Within Criteria	Exceedance/Notes
N	Tetrachloroethene and trichloroethene were detected in the method blank below the associated reporting limits (RLs). Therefore, the trichloroethene results below the RLs for all samples were raised to the RL and qualified as non-detect (U). Additionally, the tetrachloroethene results for GRPCE-31-IA- MAIN) and GRPCE-35-OA- were less than ten times the associated blank value and were therefore qualified as estimated with a possible high bias (J+). No further qualifications were required because the associated results were greater than ten times the associated blank value.



	EIA REGION S START CONTRACT
Field blank	s:
Within Criteria	Exceedance/Notes
NA	
Interferenc	te Check Samples (ICS) (ICP metals only):
Within Criteria	Exceedance/Notes
NA	
	nitoring compounds (surrogates and labeled compounds):
Within Criteria	Exceedance/Notes
Y	
'	
MS/MSD:	
Within Criteria	Exceedance/Notes
NA	
Post digest	ion spikes:
Within	Exceedance/Notes
Criteria	
NA	
Serial diluti	ions:
Within Criteria	Exceedance/Notes



NA

	EPA REGION 5 START CONTRACT
Laboratory duplicates:	
Within	Exceedance/Notes
Criteria	Exceedance, Notes
NA	
Field duplicates:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
NA	
LCSs/LCSDs:	
Within	Evenedower /Notes
Criteria	Exceedance/Notes
Υ	
Sample dilutions:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
NA	
Re-extraction and reanalysis:	
Within	E In (No. 1)
Criteria	Exceedance/Notes
NA	
Second column confirmation (GC and H	PLC analyses only):
Within	
Criteria	Exceedance/Notes



NA

Internal Standards:

Within Criteria	Exceedance/Notes
Υ	

Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	The laboratory qualified results between the RL and method detection limit as estimated (J).

Tentatively identified compounds:

	,
Within	Even dance / Notes
Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within	Exceedance/Notes
Criteria	
Υ	

Other [specify]:

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:

1	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.
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.





Date: 04-Oct-16

Client: **TETRA TECH**

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16100012

Sample Identification GRPCE-31-IA-

BASEMENT) Date Sampled: 10/2/2016

Lab Number: 006A

Date Received: 10/3/2016

Sample Type:

Air, Can

Test Method:

EPA Method TO-15A

Analysis Date: 10/3/2016 Analyst: DRS

Initial Pressure:

-2.02 psig

Final Pressure:

-2.02 psig

Canister ID:

14612

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	0.040	0.024	0.16	(0.010J	0.0061	0.04	1	8
127-18-4	Tetrachlorocthene	1.2	0.036	0.27	0.17	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	28	0.019	0.16	7.0	0.0049	0.04	1	
79-01-6	Trichloroethene	-0.16	0.021	0.211	10:030	0.0039	0.04U	1	1
75-01-4	Vinyl Chloride	QV.	0.022	0.104	N AND	0 0088	0.04	1/1	

87415



^{-;} Information not available or not applicable.

ND: Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Trichloroethene Vinyl Chloride Date: 04-Oct-16

Client:	TETRA TECH	
Project:	GRAND RAPIDS EMERGENCY RESPONSE	Work Order No: 16100012
Sample Identif	ication GRPCE-31-IA- MAIN)	Date Sampled: 10/2/2016
Lab Number:	005A	Date Received: 10/3/2016
Sample Type:	Air, Can	Analysis Date: 10/3/2016
Test Method:	EPA Method TO-15A	Analyst: DRS
Initial Pressure	e: -2.16 psig	
Final Pressure	-2.16 psig	
Canister ID:	14398	
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
	cis-1,2-Dichloroethene Tetrachloroethene	0.61 J+0 036 0.27 0.090 J+0.0053 0.04 1
	trans-1,2-Dichlorocthene	0.59 0.019 0.16 0.15 0.0049 0.04 1



0.0039

8800 0 -014

0.0414

0.04

79-01-6

75-01-4

-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL: Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

0.021

0.022

0.10

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



-2.45 psig

Date: 04-Oct-16

Client: TETRA TECH

Final Pressure:

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16100012

Sample Identification GRPCE-31-IA- Date Sampled: 10/2/2016

Lab Number: 004A Date Received: 10/3/2016

Sample Type: Air, Can Analysis Date: 10/3/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -2.45 psig

Canister ID: 14128 Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m3) (ppbV) (ppbV) (ppbV) CAS# Analyte

DF Qual 0 024 0.16 0.010 3 0.0061 156-59-2 cis-1,2-Dichloroethene 0.040 J 0.04 127-18-4 Tetrachloroethene 22 0.036 0.27 0.32 0.0053 0.04 156-60-5 trans-1,2-Dichloroethcne 26 0.019 0.16 6.7 0.0049 0.04 Trichloroethene 0.021 0.214 0.020 0.0039 0.044 79-01-6 0.11 Vinyl Chloride HP 0.022 0.104 ND- 0 0088 0.044 75-01-4



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL: Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 04-Oct-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16100012

Sample Identification GRPCE-31-IA

Date Sampled: 10/2/2016

Lab Number:

003A

Date Received: 10/3/2016

Sample Type:

Air, Can

Analysis Date: 10/3/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-2.45 psig

Final Pressure:

-2.45 psig

Canister ID:

13966

CAS#	Analyte		MDL ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	0.040 3	0 024	0.16	(0.010 J	0061	0.04	1	1
127-18-4	Tetrachloroethene	1.6	0.036	0.27	0.23	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	16	0.019	0.16	4.0	0.0049	0.04	1	
79-01-6	Trichloroethene	-0.054-	0.021	0.21	4 0,010-	0.0039	0.044	11	1
75-01-4	Vinyl Chloride	ND	0.022	0.10	A) NO	0 0088	0.04	11	



B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 04-Oct-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16100012

Sample Identification GRPCE-32-JA-

Date Sampled: 10/2/2016

Lab Number:

001A

Data Daniel de 10/2/2016

Sample Type:

Air, Can

Date Received: 10/3/2016

Test Method:

EPA Method TO-15A

Analysis Date: 10/3/2016 Analyst: DRS

Initial Pressure:

-2.95 psig

Final Pressure:

-2.95 psig

Canister ID:

13933

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DJ	F Qual
156-59-2	cis-1,2-Dichlorocthene	(0.0793 0.024 0.16 (0.0203 0.061 0.04 1	Y
127-18-4	Tetrachloroethene	0.75 0.036 0.27 0.11 0.0053 0.04 1	
156-60-5	trans-1,2-Dichlorocthene	0.83 0.019 0.16 0.21 0.0049 0.04 1	
79-01-6	Trichloroethene	-0.11 0.021 0 21 41.020 0.0039 0.044 1	1
75-01-4	Vinyl Chloride	NB 0.022 0.104 ND 0.0088 0.044 1	



-. Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 04-Oct-16

Client: Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16100012

Sample Identification GRPCE-32-IA

Date Sampled: 10/2/2016

Lab Number:

Sample Type:

002A

Date Received: 10/3/2016

Air, Can

TETRA TECH

Analysis Date: 10/3/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-2.94 psig

Final Pressure:

-2.94 psig

Canister ID:

14571

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	NO	0.024	0.16	W NB	0 0061	(0,044	1	
127-18-4	Tetrachloroethene	1.7	0.036	0.27	0.25	0.0053	0.04	1	
156-60-5	trans-1,2-Dichlorocthene	4.0	0.019	0.16	1.0	0.0049	0.04	1	
79-01-6	Trichloroethene	-0.054-	0.021	0.21	4-0.010-	0.0039	0.044	1	15
75-01-4	Vinyl Chloride	NB	0.022	0.10	u) ND	0.0088	0.044	1	



⁻ Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Date: 04-Oct-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16100012

Sample Identification GRPCE-35-OA-

Date Sampled: 10/2/2016

Lab Number:

007A

Date Received: 10/3/2016

Sample Type:

Air, Can

Analysis Date: 10/3/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-0.88 psig

Final Pressure:

-0.88 psig

Canister 1D:

14462

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 0.164 ND 0.0061 0.044 1
127-18-4	Tetrachloroethene	0.27.74 0.036 0.27 0.040 7+0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	0.040 \$ 0.019 0.16 0.010 \$ 0.049 0.04 1
79-01-6	Trichloroethene	0.054 0.021 0.21 0.21 0.0039 0.004 1 1
75-01-4	Vinyl Chloride	ND 0.022 0.104 ND 0.0088 0.044 1



B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



October 17, 2016

Betsy Nightingale On-Scene Coordinator U.S. Environmental Protection Agency Region 5 9311 Groh Road Grosse Ile, MI 48138-1697

Subject: Data Validation Reports

Grand Rapids VI ER

EPA Contract No. EP-S5-13-01

Technical Direction Document No. S05-0001-1605-010

Document Tracking No. 1138

Dear Ms. Nightingale:

Tetra Tech Inc. (Tetra Tech) is submitting these Data Validation Reports for fourteen air samples collected at the Grand Rapids VI ER site. The samples were collected October 5 through 7, 2016 and were analyzed for volatile organic compounds by ALS Environmental Laboratories and Eurofins-Air Toxics Laboratory. Tetra Tech received the final data on October 14, 2016.

Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines* (NFG) for Superfund Organic Methods Data Review (August 2014).

No rejection or qualification of results was required for these data sets. The data is usable as reported by the laboratories.

If you have any questions regarding these Data Validation Reports, please call me at (662) 681-5727.

Sincerely,

Jessica A. Vickers START Chemist

Enclosure

cc: Kevin Scott, Tetra Tech Program Manager

Michael Browning, Tetra Tech Project Manager

TDD File

Jesaca a Vickers

ATTACHMENT 1

DATA VALIDATION REPORTS ALS ENVIRONMENTAL SDG P1604714 EUROFINS-AIR TOXICS SDGS 1610063 AND 1610154

Site Name	Grand Rapids VI ER	TDD No	SOF 0001 160F 010	
Document Tracking No.	1138A	TDD No.	S05-0001-1605-010	
Data Reviewer (signature and date)	Jeoaca A. Vickers October 14, 2016	Technical Reviewer (signature and date)	Hang N. Ellis III 17 October 2016	
Laboratory Report No.	P1604714	Laboratory	ALS Laboratories/Simi Valley, CA	
Analyses	Volatile organic compounds (VOCs) by EPA I	Method TO-15		
Samples and Matrix	Seven air samples			
Field Duplicate Pairs	None			
Field Blanks	None	_	_	

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrument Performance Checks:	
Within	
Criteria	Exceedance/Notes
Υ	
,	
Initial Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Y	
Continuing Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/Notes
Y	
Calibration Verification:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Y	
Method blanks:	
Within	Evenedones /Netes
Criteria	Exceedance/Notes
Υ	

Field blanks:

Vithin riteria	Exceedance/Notes
NA	



Interference Check Sam	iples (ICS)) (ICP	metals	only):
------------------------	-------------	--------	--------	--------

Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

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
NA	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Υ	

Sample dilutions:

Within Criteria	Exceedance/Notes			
	1.51x: VOCs for GRPCE-05-IA-	(Basement)	1.60x: VOCs for GRPCE-05-IA-	(Main)
Y	1.56x: VOCs for GRPCE-05-IA-	(Basement)	1.73x: VOCs for GRPCE-05-IA-	(Main)
	1.57x: VOCs for GRPCE-06-IA-		8.35x: VOCs for GRPCE-05-IA-	(Main)
	1.58x: VOCs for GRPCE-05-IA-	(Basement)		

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
Υ	

Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	All results were either non-detect or above RL

Tentatively identified compounds:

Within	Exceedance/Notes
Criteria	
NA	

System performance and instrument stability:

Within	Exceedance/Notes
Criteria	
Υ	

Other [specify]:

Other [spe	ther [specify].						
Within	Evenedones /Notes						
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:

1	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.
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.



GRAND RAPIDS VI ER ANALYTICAL RESULTS SUMMARY ALS ENVIRONMENTAL REPORT NO. P1604714

Samp_No		Analyte	Result Lab_Qualifier	MDL	RL Result_Units	Val_Result Val_Qualifier
GRPCE-05-IA-	(Basement)	cis-1,2-Dichloroethene	0.039 U	0.036	0.039 ppbV	0.039 U
GRPCE-05-IA-	(Basement)	Tetrachloroethene	0.29	0.017	0.023 ppbV	0.29
GRPCE-05-IA-	(Basement)	trans-1,2-Dichloroethene	0.039 U	0.036	0.039 ppbV	0.039 U
GRPCE-05-IA-	(Basement)	Trichloroethene (TCE)	0.029 U	0.026	0.029 ppbV	0.029 U
GRPCE-05-IA-	(Basement)	Vinyl Chloride	0.061 U	0.058	0.061 ppbV	0.061 U
GRPCE-05-IA-	(Basement)	cis-1,2-Dichloroethene	0.16 U	0.14	0.16 ug/m3	0.16 U
GRPCE-05-IA-	(Basement)	Tetrachloroethene	1.9	0.11	0.16 ug/m3	1.9
GRPCE-05-IA-	(Basement)	trans-1,2-Dichloroethene	0.16 U	0.14	0.16 ug/m3	0.16 U
GRPCE-05-IA-	(Basement)	Trichloroethene (TCE)	0.16 U	0.14	0.16 ug/m3	0.16 U
GRPCE-05-IA-	(Basement)	Vinyl Chloride	0.16 U	0.15	0.16 ug/m3	0.16 U
GRPCE-05-IA-	(Main)	cis-1,2-Dichloroethene	0.044 U	0.04	0.044 ppbV	0.044 U
GRPCE-05-IA-	(Main)	Tetrachloroethene	0.14	0.018	0.026 ppbV	0.14
GRPCE-05-IA-	(Main)	trans-1,2-Dichloroethene	0.044 U	0.04	0.044 ppbV	0.044 U
GRPCE-05-IA-	(Main)	Trichloroethene (TCE)	0.032 U	0.029	0.032 ppbV	0.032 U
GRPCE-05-IA-	(Main)	Vinyl Chloride	0.068 U	0.064	0.068 ppbV	0.068 U
GRPCE-05-IA-	(Main)	cis-1,2-Dichloroethene	0.17 U	0.16	0.17 ug/m3	0.17 U
GRPCE-05-IA-	(Main)	Tetrachloroethene	0.98	0.12	0.17 ug/m3	0.98
GRPCE-05-IA-	(Main)	trans-1,2-Dichloroethene	0.17 U	0.16	0.17 ug/m3	0.17 U
GRPCE-05-IA-	(Main)	Trichloroethene (TCE)	0.17 U	0.15	0.17 ug/m3	0.17 U
GRPCE-05-IA-	(Main)	Vinyl Chloride	0.17 U	0.16	0.17 ug/m3	0.17 U
GRPCE-05-IA-	(Basement)	cis-1,2-Dichloroethene	0.04 U	0.037	0.04 ppbV	0.04 U
GRPCE-05-IA-	(Basement)	Tetrachloroethene	0.30	0.017	0.023 ppbV	0.30
GRPCE-05-IA-	(Basement)	trans-1,2-Dichloroethene	0.04 U	0.036	0.04 ppbV	0.04 U
GRPCE-05-IA-	(Basement)	Trichloroethene (TCE)	0.029 U	0.026	0.029 ppbV	0.029 U
GRPCE-05-IA-	(Basement)	Vinyl Chloride	0.062 U	0.059	0.062 ppbV	0.062 U
GRPCE-05-IA-	(Basement)	cis-1,2-Dichloroethene	0.16 U	0.15	0.16 ug/m3	0.16 U
GRPCE-05-IA-	(Basement)	Tetrachloroethene	2.0	0.11	0.16 ug/m3	2.0
GRPCE-05-IA-	(Basement)	trans-1,2-Dichloroethene	0.16 U	0.14	0.16 ug/m3	0.16 U
GRPCE-05-IA-	(Basement)	Trichloroethene (TCE)	0.16 U	0.14	0.16 ug/m3	0.16 U
GRPCE-05-IA-	(Basement)	Vinyl Chloride	0.16 U	0.15	0.16 ug/m3	0.16 U
GRPCE-05-IA-	(Main)	cis-1,2-Dichloroethene	0.04 U	0.037	0.04 ppbV	0.04 U
GRPCE-05-IA-	(Main)	Tetrachloroethene	0.099	0.017	0.024 ppbV	0.099
GRPCE-05-IA-	(Main)	trans-1,2-Dichloroethene	0.04 U	0.037	0.04 ppbV	0.04 U

GRAND RAPIDS VI ER ANALYTICAL RESULTS SUMMARY ALS ENVIRONMENTAL REPORT NO. P1604714

Samp_No		Analyte	Result Lab_Qualifier	MDL	RL Result_Units	Val_Result Val_Qualifier	
GRPCE-05-IA-	(Main)	Trichloroethene (TCE)	0.03 U	0.027	0.03 ppbV	0.03 U	
GRPCE-05-IA-	(Main)	Vinyl Chloride	0.063 U	0.059	0.063 ppbV	0.063 U	
GRPCE-05-IA-	(Main)	cis-1,2-Dichloroethene	0.16 U	0.15	0.16 ug/m3	0.16 U	
GRPCE-05-IA-	(Main)	Tetrachloroethene	0.67	0.12	0.16 ug/m3	0.67	
GRPCE-05-IA-	(Main)	trans-1,2-Dichloroethene	0.16 U	0.15	0.16 ug/m3	0.16 U	
GRPCE-05-IA-	(Main)	Trichloroethene (TCE)	0.16 U	0.14	0.16 ug/m3	0.16 U	
GRPCE-05-IA-	(Main)	Vinyl Chloride	0.16 U	0.15	0.16 ug/m3	0.16 U	
GRPCE-05-IA-	(Basement)	cis-1,2-Dichloroethene	0.038 U	0.035	0.038 ppbV	0.038 U	
GRPCE-05-IA-	(Basement)	Tetrachloroethene	0.11	0.016	0.022 ppbV	0.11	
GRPCE-05-IA-	(Basement)	trans-1,2-Dichloroethene	0.038 U	0.035	0.038 ppbV	0.038 U	
GRPCE-05-IA-	(Basement)	Trichloroethene (TCE)	0.028 U	0.025	0.028 ppbV	0.028 U	
GRPCE-05-IA-	(Basement)	Vinyl Chloride	0.059 U	0.056	0.059 ppbV	0.059 U	
GRPCE-05-IA-	(Basement)	cis-1,2-Dichloroethene	0.15 U	0.14	0.15 ug/m3	0.15 U	
GRPCE-05-IA-	(Basement)	Tetrachloroethene	0.74	0.11	0.15 ug/m3	0.74	
GRPCE-05-IA-	(Basement)	trans-1,2-Dichloroethene	0.15 U	0.14	0.15 ug/m3	0.15 U	
GRPCE-05-IA-	(Basement)	Trichloroethene (TCE)	0.15 U	0.13	0.15 ug/m3	0.15 U	
GRPCE-05-IA-	(Basement)	Vinyl Chloride	0.15 U	0.14	0.15 ug/m3	0.15 U	
GRPCE-05-IA-	(Main)	cis-1,2-Dichloroethene	0.21 U	0.19	0.21 ppbV	0.21 U	
GRPCE-05-IA-	(Main)	Tetrachloroethene	0.12 U	0.089	0.12 ppbV	0.12 U	
GRPCE-05-IA-	(Main)	trans-1,2-Dichloroethene	0.21 U	0.19	0.21 ppbV	0.21 U	
GRPCE-05-IA-	(Main)	Trichloroethene (TCE)	0.16 U	0.14	0.16 ppbV	0.16 U	
GRPCE-05-IA-	(Main)	Vinyl Chloride	0.33 U	0.31	0.33 ppbV	0.33 U	
GRPCE-05-IA-	(Main)	cis-1,2-Dichloroethene	0.84 U	0.77	0.84 ug/m3	0.84 U	
GRPCE-05-IA-	(Main)	Tetrachloroethene	0.84 U	0.6	0.84 ug/m3	0.84 U	
GRPCE-05-IA-	(Main)	trans-1,2-Dichloroethene	0.84 U	0.76	0.84 ug/m3	0.84 U	
GRPCE-05-IA-	(Main)	Trichloroethene (TCE)	0.84 U	0.74	0.84 ug/m3	0.84 U	
GRPCE-05-IA-	(Main)	Vinyl Chloride	0.84 U	0.79	0.84 ug/m3	0.84 U	
GRPCE-06-IA-		cis-1,2-Dichloroethene	0.04 U	0.036	0.04 ppbV	0.04 U	
GRPCE-06-IA-		Tetrachloroethene	0.078	0.017	0.023 ppbV	0.078	
GRPCE-06-IA-		trans-1,2-Dichloroethene	0.04 U	0.036	0.04 ppbV	0.04 U	
GRPCE-06-IA-		Trichloroethene (TCE)	0.029 U	0.026	0.029 ppbV	0.029 U	
GRPCE-06-IA-		Vinyl Chloride	0.061 U	0.058	0.061 ppbV	0.061 U	
GRPCE-06-IA-		cis-1,2-Dichloroethene	0.16 U	0.14	0.16 ug/m3	0.16 U	

GRAND RAPIDS VI ER ANALYTICAL RESULTS SUMMARY ALS ENVIRONMENTAL REPORT NO. P1604714

Samp_No	Analyte	Result Lab_Qualifier	MDL I	RL Result_Units	Val_Result Val_Qualifier
GRPCE-06-IA-	Tetrachloroethene	0.53	0.11	0.16 ug/m3	0.53
GRPCE-06-IA-	trans-1,2-Dichloroethene	0.16 U	0.14	0.16 ug/m3	0.16 U
GRPCE-06-IA-	Trichloroethene (TCE)	0.16 U	0.14	0.16 ug/m3	0.16 U
GRPCE-06-IA-	Vinyl Chloride	0.16 U	0.15	0.16 ug/m3	0.16 U

Site Name Grand Rapids VI ER		TDD No.	\$05-0001-1605-010		
Document Tracking No. 1138B		ואט אט.	303-0001-1603-010		
Data Reviewer (signature and date)	Jeogra A. Vickers October 14, 2016	Technical Reviewer (signature and date)	Hang N. Ellis III 17 October 2016		
Laboratory Report No. 1610063		Laboratory	Eurofins-Air Toxics/Folsom, CA		
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15			
Samples and Matrix Two air samples					
Field Duplicate Pairs None					
Field Blanks None					

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrument Performance Checks:	
Within	
Criteria	Exceedance/Notes
Υ	
,	
Initial Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Y	
Continuing Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/Notes
Y	
Calibration Verification:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Y	
Method blanks:	
Within	Evenedones /Netes
Criteria	Exceedance/Notes
Υ	

Field blanks:

Vithin riteria	Exceedance/Notes
NA	



Interference Check Sam	iples (ICS)) (ICP	metals	only):
------------------------	-------------	--------	--------	--------

Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	



Field	dup	licates

Within Criteria	Exceedance/Notes
NA	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Υ	

Sample dilutions:

Within Criteria			Exceedance/Notes	
Υ	1.66x: GRPCE-05-IA-	(Basement)	1.67x: GRPCE-05-IA-	(Main)

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
Υ	



Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	Results between the method detection limit and the reporting limit were qualified as estimated (J) by the laboratory.

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

other labe	···· / J.
Within	Even adams / Notes
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:

1	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.
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.



GRAND RAPIDS VI ER ANALYTICAL RESULTS SUMMARY EUROFINS-AIR TOXICS REPORT NO. 1610063

CLIENTSAMPID		COMPOUND NAME	RESULTS	DATAFLAGS	MDL	REPLMT	UNITS	VALRESULTS	VALFLAGS
GRPCE-05-IA-	(Main)	Vinyl Chloride		ND	0.037	0.17	PPBV	0.17	U
GRPCE-05-IA-	(Main)	trans-1,2-Dichloroethene		ND	0.050	0.17	PPBV	0.17	U
GRPCE-05-IA-	(Main)	cis-1,2-Dichloroethene		ND	0.048	0.17	PPBV	0.17	U
GRPCE-05-IA-	(Main)	Trichloroethene		ND	0.050	0.17	PPBV	0.17	U
GRPCE-05-IA-	(Main)	Tetrachloroethene	0.10	J	0.046	0.17	PPBV	0.10	J
GRPCE-05-IA-	(Main)	Vinyl Chloride		ND	0.095	0.43	UG/M3	0.43	U
GRPCE-05-IA-	(Main)	trans-1,2-Dichloroethene		ND	0.20	0.66	UG/M3	0.66	U
GRPCE-05-IA-	(Main)	cis-1,2-Dichloroethene		ND	0.19	0.66	UG/M3	0.66	U
GRPCE-05-IA-	(Main)	Trichloroethene		ND	0.27	0.90	UG/M3	0.90	U
GRPCE-05-IA-	(Main)	Tetrachloroethene	0.71	J	0.31	1.1	UG/M3	0.71	J
GRPCE-05-IA-	(Basement)	Vinyl Chloride		ND	0.037	0.17	PPBV	0.17	U
GRPCE-05-IA-	(Basement)	trans-1,2-Dichloroethene		ND	0.049	0.17	PPBV	0.17	U
GRPCE-05-IA-	(Basement)	cis-1,2-Dichloroethene		ND	0.048	0.17	PPBV	0.17	U
GRPCE-05-IA-	(Basement)	Trichloroethene		ND	0.049	0.17	PPBV	0.17	U
GRPCE-05-IA-	(Basement)	Tetrachloroethene	0.37		0.045	0.17	PPBV	0.37	
GRPCE-05-IA-	(Basement)	Vinyl Chloride		ND	0.094	0.42	UG/M3	0.42	U
GRPCE-05-IA-	(Basement)	trans-1,2-Dichloroethene		ND	0.20	0.66	UG/M3	0.66	U
GRPCE-05-IA-	(Basement)	cis-1,2-Dichloroethene		ND	0.19	0.66	UG/M3	0.66	U
GRPCE-05-IA-	(Basement)	Trichloroethene		ND	0.26	0.89	UG/M3	0.89	U
GRPCE-05-IA-	(Basement)	Tetrachloroethene	2.5		0.31	1.1	UG/M3	2.5	

Site Name	Grand Rapids VI ER	TDD No.	S05-0001-1605-010	
Document Tracking No.	1138C	IDD NO.		
Data Reviewer (signature and date)	Jeoaca A. Vickers October 14, 2016	Technical Reviewer (signature and date)	Hang N. Ellis III 17 October 2016	
Laboratory Report No.	1610154	Laboratory	Eurofins-Air Toxics/Folsom, CA	
Analyses	Volatile organic compounds (VOCs) by EPA Method TO-15			
Samples and Matrix Five air samples				
Field Duplicate Pairs	None			
Field Blanks None				

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrument Performance Checks:	
Within	
Criteria	Exceedance/Notes
Υ	
,	
Initial Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Y	
Continuing Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/Notes
Y	
Calibration Verification:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Y	
Method blanks:	
Within	Evenedones /Netes
Criteria	Exceedance/Notes
Υ	

Field blanks:

Vithin riteria	Exceedance/Notes
NA	



Interference Check Sam	iples (ICS)) (ICP	metals	only):
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Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

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
NA	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Υ	

Sample dilutions:

Within Criteria	Exceedance/Notes		
	1.46x: GRPCE-01-B	1.97x: GRPCE-05-IA-	
Υ	1.49x: GRPCE-01-A1	6.07x: GRPCE-01-	
	1.61x: GRPCE-05-IA-Common)		

Re-extraction and reanalysis:

Within	Even adams / Notes		
Criteria	Exceedance/Notes		
NA			

Second column confirmation (GC and HPLC analyses only):

Within Criteria	Exceedance/Notes
NA	



Internal Standards:

Within Criteria	Exceedance/Notes
Υ	

Target analyte identification:

Within Criteria	Exceedance/Notes				
Υ					

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	Results between the method detection limit and the reporting limit were qualified as estimated (J) by the laboratory.

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within	Fxceedance/Notes		
Criteria			
Υ			

Other [specify]:

other (specify).						
Within	Evenedones /Notes					
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:

1	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample.
,	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.



GRAND RAPIDS VI ER ANALYTICAL RESULTS SUMMARY EUROFINS-AIR TOXICS REPORT NO. 1610154

CLIENTSAMPID	COMPOUND NAME	RESULTS	DATAFLAGS	MDL	REPLMT	UNITS	VALRESULTS	VALFLAGS
GRPCE-01-A1	Vinyl Chloride		ND	0.039		PPBV	0.15	U
GRPCE-01-A1	trans-1,2-Dichloroethene		ND	0.035	0.15	PPBV	0.15	U
GRPCE-01-A1	cis-1,2-Dichloroethene		ND	0.049	0.15	PPBV	0.15	U
GRPCE-01-A1	Trichloroethene	0.27		0.050	0.15	PPBV	0.27	
GRPCE-01-A1	Tetrachloroethene	33		0.024	0.15	PPBV	33	
GRPCE-01- A1	Vinyl Chloride		ND	0.10	0.38	UG/M3	0.38	U
GRPCE-01-A1	trans-1,2-Dichloroethene		ND	0.14	0.59	UG/M3	0.59	U
GRPCE-01-A1	cis-1,2-Dichloroethene		ND	0.19	0.59	UG/M3	0.59	U
GRPCE-01-A1	Trichloroethene	1.4		0.27	0.80	UG/M3	1.4	
GRPCE-01-A1	Tetrachloroethene	220		0.16	1.0	UG/M3	220	
GRPCE-01- A2	Vinyl Chloride		ND	0.32	3.0	PPBV	3.0	U
GRPCE-01-A2	cis-1,2-Dichloroethene	4.1		0.85	3.0	PPBV	4.1	
GRPCE-01-A2	Trichloroethene	12		0.27	3.0	PPBV	12	
GRPCE-01-A2	Tetrachloroethene	1200		0.35	3.0	PPBV	1200	
GRPCE-01-A2	trans-1,2-Dichloroethene		ND	0.90	3.0	PPBV	3.0	U
GRPCE-01-A2	Vinyl Chloride		ND	0.81	7.8	UG/M3	7.8	U
GRPCE-01-A2	cis-1,2-Dichloroethene	16		3.4	12	UG/M3	16	
GRPCE-01-A2	Trichloroethene	68		1.4	16	UG/M3	68	
GRPCE-01-A2	Tetrachloroethene	8000		2.4	20	UG/M3	8000	
GRPCE-01-A2	trans-1,2-Dichloroethene		ND	3.6	12	UG/M3	12	U
GRPCE-01-B	Vinyl Chloride		ND	0.038	0.15	PPBV	0.15	U
GRPCE-01-B	trans-1,2-Dichloroethene		ND	0.034	0.15	PPBV	0.15	U
GRPCE-01-B	cis-1,2-Dichloroethene		ND	0.048	0.15	PPBV	0.15	U
GRPCE-01-B	Trichloroethene	0.14	J	0.049	0.15	PPBV	0.14	J
GRPCE-01-B	Tetrachloroethene	15		0.023	0.15	PPBV	15	
GRPCE-01-B	Vinyl Chloride		ND	0.098	0.37	UG/M3	0.37	U
GRPCE-01-B	trans-1,2-Dichloroethene		ND	0.13	0.58	UG/M3	0.58	U
GRPCE-01-B	cis-1,2-Dichloroethene		ND	0.19	0.58	UG/M3	0.58	U
GRPCE-01-B	Trichloroethene	0.76	J	0.26	0.78	UG/M3	0.76	J
GRPCE-01-B	Tetrachloroethene	100		0.16	0.99	UG/M3	100	
GRPCE-05-IA- Common) Vinyl Chloride		ND	0.042	0.16	PPBV	0.16	U
GRPCE-05-IA-Common) trans-1,2-Dichloroethene		ND	0.037	0.16	PPBV	0.16	U
GRPCE-05-IA-Common) cis-1,2-Dichloroethene		ND	0.052	0.16	PPBV	0.16	U

GRAND RAPIDS VI ER ANALYTICAL RESULTS SUMMARY EUROFINS-AIR TOXICS REPORT NO. 1610154

CLIENTSAMPID		COMPOUND NAME	RESULTS	DATAFLAGS	MDL	REPLMT	UNITS	VALRESULTS	VALFLAGS
GRPCE-05-IA-	Common)	Trichloroethene		ND	0.054	0.16	PPBV	0.16	U
GRPCE-05-IA-	Common)	Tetrachloroethene	0.11	J	0.026	0.16	PPBV	0.11	J
GRPCE-05-IA-	Common)	Vinyl Chloride		ND	0.11	0.41	UG/M3	0.41	U
GRPCE-05-IA-	Common)	trans-1,2-Dichloroethene		ND	0.15	0.64	UG/M3	0.64	U
GRPCE-05-IA-	Common)	cis-1,2-Dichloroethene		ND	0.21	0.64	UG/M3	0.64	U
GRPCE-05-IA-	Common)	Trichloroethene		ND	0.29	0.86	UG/M3	0.86	U
GRPCE-05-IA-	Common)	Tetrachloroethene	0.75	J	0.17	1.1	UG/M3	0.75	J
GRPCE-05-IA-	SFR)	Vinyl Chloride		ND	0.052	0.20	PPBV	0.20	U
GRPCE-05-IA-	SFR)	trans-1,2-Dichloroethene		ND	0.046	0.20	PPBV	0.20	U
GRPCE-05-IA-	SFR)	cis-1,2-Dichloroethene		ND	0.064	0.20	PPBV	0.20	U
GRPCE-05-IA-	SFR)	Trichloroethene		ND	0.066	0.20	PPBV	0.20	U
GRPCE-05-IA-	SFR)	Tetrachloroethene	0.13	J	0.031	0.20	PPBV	0.13	J
GRPCE-05-IA-	SFR)	Vinyl Chloride		ND	0.13	0.50	UG/M3	0.50	U
GRPCE-05-IA-	SFR)	trans-1,2-Dichloroethene		ND	0.18	0.78	UG/M3	0.78	U
GRPCE-05-IA-	SFR)	cis-1,2-Dichloroethene		ND	0.25	0.78	UG/M3	0.78	U
GRPCE-05-IA-	SFR)	Trichloroethene		ND	0.36	1.0	UG/M3	1.0	U
GRPCE-05-IA-	SFR)	Tetrachloroethene	0.91	J	0.21	1.3	UG/M3	0.91	J



October 20, 2016

Betsy Nightingale On-Scene Coordinator U.S. Environmental Protection Agency Region 5 9311 Groh Road Grosse Ile, MI 48138-1697

Subject: Data Validation Report

Grand Rapids VI ER

EPA Contract No. EP-S5-13-01

Technical Direction Document No. S05-0001-1605-010

Document Tracking No. 1147

Dear Ms. Nightingale:

Tetra Tech Inc. (Tetra Tech) is submitting this Data Validation Report for five air samples collected at the Grand Rapids VI ER site. The samples were collected on October 7, 2016 and were analyzed for volatile organic compounds by ALS Environmental. Tetra Tech received the data on October 18, 2016.

Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines* (NFG) for Superfund Organic Methods Data Review (August 2014).

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

If you have any questions regarding this Data Validation Report, please call me at (662) 681-5727.

Sincerely,

Jessica A. Vickers START Chemist

Enclosure

cc: Kevin Scott, Tetra Tech Program Manager

Michael Browning, Tetra Tech Project Manager

TDD File

Jesaca a Vickers

ATTACHMENT 1

DATA VALIDATION REPORT ALS SDG P1604757

Site Name	Grand Rapids VI ER	TDD No.	\$05-0001-1605-010
Document Tracking No.	1147	TOD NO.	202-0001-1602-010
Data Reviewer (signature and date)	Jeoaca A. Vickers October 19, 2016	Technical Reviewer (signature and date)	Hang N. Elis To 20 October 2016
Laboratory Report No.	P1604757	Laboratory	ALS Laboratories/Simi Valley, CA
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15	
Samples and Matrix	Five air samples		
Field Duplicate Pairs	None		
Field Blanks	None		

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrument Performance Checks:	
Within	
Criteria	Exceedance/Notes
Υ	
,	
Initial Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Y	
Continuing Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/Notes
Y	
Calibration Verification:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Y	
Method blanks:	
Within	Evenedones /Netes
Criteria	Exceedance/Notes
Υ	

Field blanks:

Vithin riteria	Exceedance/Notes
NA	



Interference	Check Sam	ples (ICS)	(ICP	metals only	/):
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Within Criteria	Exceedance/Notes
NA	
System mo	onitoring compounds (surrogates and labeled compounds):

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

U		•	
Within	1		Exceedance/Notes
Criteria	а		Exceedance/Notes
NA			

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within	Exceedance/Notes
Criteria	
Υ	



Field duplicates:

Within Criteria	Exceedance/Notes
NA	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Υ	

Sample dilutions:

Within Criteria		Ex	cceedance/Notes	
	1.51x: VOCs for GRPCE-04-IA-	- W)	1.62x: VOCs for GRPCE-05-IA-	- S)
Υ	1.59x: VOCs for GRPCE-05-IA-	- N)	1.68x: VOCs for GRPCE-05-IA-	- W)
	1.60x: VOCs for GRPCE-05-IA-	- N)		

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
Υ	

Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	

Tentatively identified compounds:

	,
Within	Evenedance/Notes
Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within	Exceedance/Notes
Criteria	
Υ	

Other [specify]:

other (specify).	
Within	Even adams / Nintes
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:

1	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.
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.



GRAND RAPIDS VI ER ANALYTICAL RESULTS SUMMARY ALS ENVIRONMENTAL REPORT NO. P1604757

Samp_No		Analyte	Result Lab_Qualifier	Result_Units	MDL	RL	Val_Result Val_Qualifier
GRPCE-04-IA-	- W)	cis-1,2-Dichloroethene	0.038 U	ppbV	0.035	0.038	0.038 U
GRPCE-04-IA-	- W)	Tetrachloroethene	0.13	ppbV	0.016	0.022	0.13
GRPCE-04-IA-	- W)	trans-1,2-Dichloroethene	0.038 U	ppbV	0.035	0.038	0.038 U
GRPCE-04-IA-	- W)	Trichloroethene (TCE)	0.028 U	ppbV	0.025	0.028	0.028 U
GRPCE-04-IA-	- W)	Vinyl Chloride	0.059 U	ppbV	0.056	0.059	0.059 U
GRPCE-04-IA-	- W)	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-04-IA-	- W)	Tetrachloroethene	0.88	ug/m3	0.11	0.15	0.88
GRPCE-04-IA-	- W)	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-04-IA-	- W)	Trichloroethene (TCE)	0.15 U	ug/m3	0.13	0.15	0.15 U
GRPCE-04-IA-	- W)	Vinyl Chloride	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-05-IA-	- N)	cis-1,2-Dichloroethene	0.04 U	ppbV	0.037	0.04	0.04 U
GRPCE-05-IA-	- N)	Tetrachloroethene	0.086	ppbV	0.017	0.024	0.086
GRPCE-05-IA-	- N)	trans-1,2-Dichloroethene	0.04 U	ppbV	0.037	0.04	0.04 U
GRPCE-05-IA-	- N)	Trichloroethene (TCE)	0.03 U	ppbV	0.027	0.03	0.03 U
GRPCE-05-IA-	- N)	Vinyl Chloride	0.063 U	ppbV	0.059	0.063	0.063 U
GRPCE-05-IA-	- N)	cis-1,2-Dichloroethene	0.16 U	ug/m3	0.15	0.16	0.16 U
GRPCE-05-IA-	- N)	Tetrachloroethene	0.58	ug/m3	0.12	0.16	0.58
GRPCE-05-IA-	- N)	trans-1,2-Dichloroethene	0.16 U	ug/m3	0.15	0.16	0.16 U
GRPCE-05-IA-	- N)	Trichloroethene (TCE)	0.16 U	ug/m3	0.14	0.16	0.16 U
GRPCE-05-IA-	- N)	Vinyl Chloride	0.16 U	ug/m3	0.15	0.16	0.16 U
GRPCE-05-IA-	- N)	cis-1,2-Dichloroethene	0.17	ppbV	0.037	0.04	0.17
GRPCE-05-IA-	- N)	Tetrachloroethene	0.33	ppbV	0.017	0.023	0.33
GRPCE-05-IA-	- N)	trans-1,2-Dichloroethene	0.04 U	ppbV	0.037	0.04	0.04 U
GRPCE-05-IA-	- N)	Trichloroethene (TCE)	0.03 U	ppbV	0.026	0.03	0.03 U
GRPCE-05-IA-	- N)	Vinyl Chloride	0.062 U	ppbV	0.059	0.062	0.062 U
GRPCE-05-IA-	- N)	cis-1,2-Dichloroethene	0.68	ug/m3	0.15	0.16	0.68
GRPCE-05-IA-	- N)	Tetrachloroethene	2.2	ug/m3	0.11	0.16	2.2
GRPCE-05-IA-	- N)	trans-1,2-Dichloroethene	0.16 U	ug/m3	0.14	0.16	0.16 U
GRPCE-05-IA-	- N)	Trichloroethene (TCE)	0.16 U	ug/m3	0.14	0.16	0.16 U
GRPCE-05-IA-	- N)	Vinyl Chloride	0.16 U	ug/m3	0.15	0.16	0.16 U
GRPCE-05-IA-	- S)	cis-1,2-Dichloroethene	0.041 U	ppbV	0.038	0.041	0.041 U
GRPCE-05-IA-	- S)	Tetrachloroethene	0.28	ppbV	0.017	0.024	0.28
GRPCE-05-IA-	- S)	trans-1,2-Dichloroethene	0.041 U	ppbV	0.037	0.041	0.041 U

GRAND RAPIDS VI ER ANALYTICAL RESULTS SUMMARY ALS ENVIRONMENTAL REPORT NO. P1604757

Samp_No		Analyte	Result Lab_Qualifier	Result_Units	MDL	RL	Val_Result Val_Qualifier
GRPCE-05-IA-	- S)	Trichloroethene (TCE)	0.03 U	ppbV	0.027	0.03	0.03 U
GRPCE-05-IA-	- S)	Vinyl Chloride	0.063 U	ppbV	0.06	0.063	0.063 U
GRPCE-05-IA-	- S)	cis-1,2-Dichloroethene	0.16 U	ug/m3	0.15	0.16	0.16 U
GRPCE-05-IA-	- S)	Tetrachloroethene	1.9	ug/m3	0.12	0.16	1.9
GRPCE-05-IA-	- S)	trans-1,2-Dichloroethene	0.16 U	ug/m3	0.15	0.16	0.16 U
GRPCE-05-IA-	- S)	Trichloroethene (TCE)	0.16 U	ug/m3	0.14	0.16	0.16 U
GRPCE-05-IA-	- S)	Vinyl Chloride	0.16 U	ug/m3	0.15	0.16	0.16 U
GRPCE-05-IA-	- W)	cis-1,2-Dichloroethene	0.042 U	ppbV	0.039	0.042	0.042 U
GRPCE-05-IA-	- W)	Tetrachloroethene	0.23	ppbV	0.018	0.025	0.23
GRPCE-05-IA-	- W)	trans-1,2-Dichloroethene	0.042 U	ppbV	0.039	0.042	0.042 U
GRPCE-05-IA-	- W)	Trichloroethene (TCE)	0.031 U	ppbV	0.028	0.031	0.031 U
GRPCE-05-IA-	- W)	Vinyl Chloride	0.066 U	ppbV	0.062	0.066	0.066 U
GRPCE-05-IA-	- W)	cis-1,2-Dichloroethene	0.17 U	ug/m3	0.15	0.17	0.17 U
GRPCE-05-IA-	- W)	Tetrachloroethene	1.5	ug/m3	0.12	0.17	1.5
GRPCE-05-IA-	- W)	trans-1,2-Dichloroethene	0.17 U	ug/m3	0.15	0.17	0.17 U
GRPCE-05-IA-	- W)	Trichloroethene (TCE)	0.17 U	ug/m3	0.15	0.17	0.17 U
GRPCE-05-IA-	- W)	Vinyl Chloride	0.17 U	ug/m3	0.16	0.17	0.17 U



October 25, 2016

Betsy Nightingale On-Scene Coordinator U.S. Environmental Protection Agency Region 5 9311 Groh Road Grosse Ile, MI 48138-1697

Subject: Data Validation Reports

Grand Rapids VI ER

EPA Contract No. EP-S5-13-01

Technical Direction Document No. S05-0001-1605-010

Document Tracking No. 1154

Dear Ms. Nightingale:

Tetra Tech Inc. (Tetra Tech) is submitting these Data Validation Reports for 16 air samples (including two field duplicates) collected at the Grand Rapids VI ER site. The samples were collected on October 7 and 11, 2016 and were analyzed for volatile organic compounds by Bureau Veritas Laboratories. Tetra Tech received the final data on October 21, 2016.

Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines* (NFG) for Superfund Organic Methods Data Review (August 2014).

No rejection or qualification of results was required for these data sets. The data is usable as reported by the laboratory.

If you have any questions regarding these Data Validation Reports, please call me at (662) 681-5727.

Sincerely,

Jessica A. Vickers START Chemist

Enclosure

cc: Kevin Scott, Tetra Tech Program Manager

Michael Browning, Tetra Tech Project Manager

TDD File

Jesaca a Vickers

ATTACHMENT 1

DATA VALIDATION REPORTS BUREAU VERITAS SDGS 16100457 AND 16100673

Site Name	Grand Rapids VI ER	TDD No.	\$05-0001-1605-010	
Document Tracking No.	1154A	TOD NO.	202-0001-1002-010	
Data Reviewer (signature and date)	Jeogra A. Vickers October 24, 2016	QC Reviewer (signature and date)	October 25, 2016	
Laboratory Report No.	16100457	Laboratory	Bureau Veritas/Novi, MI	
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15		
Samples and Matrix	Seven air samples			
Field Duplicate Pairs	None			
Field Blanks	None			

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrum	Instrument Performance Checks:				
With		n Exceedance/Notes			
Criter	ria	Exceedance/Notes			
Υ					
Initial (Initial Calibration:				

Initial Calibration:

Within Criteria	Exceedance/Notes
Υ	

Continuing Calibration:

Within Criteria	Exceedance/Notes
Υ	

Calibration Verification:

Within Criteria	Exceedance/Notes
NA	

Method blanks:

Within Criteria	Exceedance/Notes
Υ	

Field blanks:

Within Criteria	Exceedance/Notes
NA	



Interference Check Sam	iples (ICS)) (ICP	metals	only):
------------------------	-------------	--------	--------	--------

Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

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
NA	
LCSs/LCSDs:	
Within Criteria	Exceedance/Notes
Υ	
Sample dilution	ns:
Within Criteria	Exceedance/Notes
NA	
Re-extraction a	nd reanalysis:
Within Criteria	Exceedance/Notes
NA	
Second column	confirmation (GC and HPLC analyses only):
Within Criteria	Exceedance/Notes
NA	
Internal Standa	ırds:
Within Criteria	Exceedance/Notes



Target analyte identification	Target	analy	vte i	iden	tifica	ition
-------------------------------	--------	-------	-------	------	--------	-------

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	The laboratory qualified results between the RL and method detection limit as estimated (J).

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

Other labe	
Within	Even adams / Nintes
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:

1	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.
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.





trans-1,2-Dichloroethene

Trichloroethene

Vinyl Chloride

Date: 13-Oct-16

Client:	TETRA TECH								
Project:	GRAND RAPIDS EMERGENCY RESPONSE				Work Or	ier No:	1610045	7	
Sample Identificat	ion GRPCE-32-IA-BASEMENT)				Date Sa	mpled:	10/7/201	6	
Lab Number:	006A				Date Re	ceived:	10/7/201	6	
Sample Type:	Air, Can				Analysi	s Date:	10/10/20	16	
Test Method:	EPA Method TO-15A				A	nalyst:	DRS		
Initial Pressure:	-1.79 psig								
Final Pressure:	-1.79 psig								
Canister 1D:	14534								
CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
	1,2-Dichloroethene	0.88	0.024	-	-	0.0061	0.0414	Di	



0.0049

0.010 3 0.0039

8800 0 -GM

0.04

0.04

0.044

156-60-5

79-01-6

75-01-4

0.019

0.021

0.022

0.16

0.21

0.104

1.8

7.0

0.054 3

⁻⁻ Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL: Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 13-Oct-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16100457

Sample Identification GRPCE-32-IA-

MAIN)

Date Sampled: 10/7/2016

Lab Number:

005A

Sample Type:

Air, Can

Date Received: 10/7/2016

Analyst: DRS

Test Method:

EPA Method TO-15A

Analysis Date: 10/10/2016

Initial Pressure:

-1.75 psig

Final Pressure:

-1.75 psig

Canister ID:

14574

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	ND	0.024	0 16	W NB	0 0061	(0 04LL)1	
127-18-4	Tetrachlorocthene	1.7	0.036	0.27	0.25	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	6.5	0.019	0.16	1.6	0.0049	0.04	1	
79-01-6	Trichloroethene	0.21	0.021	0.21	0.040	0.0039	0.04	1	
75-01-4	Vinyl Chloride	ND	0.022	(0.10	U) NO	0 0088	0.04 L	YI	



^{-:} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J, Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 13-Oct-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16100457

Sample Identification GRPCE-32-IA-

Date Sampled: 10/7/2016

Lab Number:

004A

Date Received: 10/7/2016

Sample Type:

Air, Can

Analysis Date: 10/10/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-1.94 psig

Final Pressure:

-1.94 psig

Canister ID:

14617

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qu
156-59-2	cis-1,2-Dichloroethene	ND 0.024 (0.164) ND 0.0061 (0.044)
127-18-4	Tetrachloroethene	1.0 0.036 0.27 0.15 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	6.5 0.019 0.16 1.7 0.0049 0.04 1
79-01-6	Trichloroethene	0.0543 0.021 0.21 0.0103 0.0039 0.04 1
75-01-4	Vinyl Chloride	NB 0.022 (0.10 u) ND 0.0088 (0.04 U)



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL, Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Tetrachloroethene

Trichloroethene

Vinyl Chloride

trans-1,2-Dichloroethene

Date: 13-Oct-16

Client:	TETRA TECH						
Project:	GRAND RAPIDS EMERGENCY RESP	ONSE	V	Vork Order N	lo: 1610045	7	
Sample Identificat	ion GRPCE-32-IA			Date Sample	ed: 10/7/201	6	
Lab Number:	003A			Date Receive	ed: 10/7/201	6	
Sample Type:	Air, Can			Analysis Da	te: 10/10/20	16	
Test Method:	EPA Method TO-15A			Analy	st: DRS		
Initial Pressure:	-2.1 psig						
Final Pressure:	-2.1 psig						
Canister ID:	142111						
CAS#	Analyte	7,077	IDL RL g/m³) (ug/m³)	Results MI (ppbV) (ppl	STEP IN PARTY STORY	DF	Qual
156-59-2 cis-	,2-Dichloroethene	ND	0.024 (0.16	ND 0.00	0.04	1	

1.1

0.44

0.054J

ND-

0.036

0.019

0.021

0.022

0.27

0.16

0.21

0104



0.16

0.11

0.0053

0.0049

0.010 0 0039

₩D 0 0088

0.04

0.04

0.04

0.04

127-18-4

156-60-5

79-01-6

75-01-4

^{--,} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 13-Oct-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16100457

Sample Identification GRPCE-33-IA 1) Date Sampled: 10/7/2016

Lab Number: 001A Date Received: 10/7/2016

Sample Type: Air, Can Analysis Date: 10/10/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -2.47 psig
Final Pressure: -2.47 psig

Canister ID: 13997

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	0.040	0 024	0.16	0.0103	0.0061	0.04	1	1
127-18-4	Tetrachlorocthene	1.0	0.036	0.27	0.15	.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	0.079	5 0 019	0.16	0.020-	0.0049	0.04	1	8
79-01-6	Trichloroethene	0.11	0 021	0.21	0.020 3	0 0039	0.04	1	1
75-01-4	Vinyl Chloride	NE	0.022	0.10	ND ND	0 0088	(0.040	01	



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B, Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 13-Oct-16

Client:	TETRA TECH		
Project:	GRAND RAPIDS EMERGENCY RESPONSE	Work Order No:	16100457
Sample Iden	tification GRPCE-33-IA (2)	Date Sampled:	10/7/2016
Lab Number	r: 002A	Date Received:	10/7/2016
Sample Type	e: Air, Can	Analysis Date:	10/10/2016
Test Method	l: EPA Method TO-15A	Analyst:	DRS
Initial Press	ure: -1.86 psig		
Final Pressu	rre: -1.86 psig		
Canister ID:	: 13999		
CAS#	Analyte	Results MDL RL Results MDL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV)	RL (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 (5.164) NB 0.0061	0.0441
127-18-4	Tetrachloroethene	0.88 0.036 0.27 0.13 0.0053	0.04 1
156-60-5	trans-1,2-Dichloroethene	0.16 0.019 0.16 0.040 0.0049	0.04 1
79-01-6	Trichloroethene	0.054 3 0 021 0.21 0.010 3 0.0039	0.04 1
75-01-4	Vinyl Chloride	ND 0.022 0.10 ND 0 0088	0.0440 1



-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 13-Oct-16

Date Received: 10/7/2016

Analysis Date: 10/10/2016

Analyst: DRS

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16100457

Sample Identification GRPCE-36-OA-

Lab Number: 007A

.. 0

Sample Type: Air, Can

Test Method:

EPA Method TO-15A

Initial Pressure: -1.81 psig

Final Pressure: -1.81 psig

Canister ID: 14068

Camster 1D	14000	
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 016 W NB 0 0061 (0.04 U)
127-18-4	Tetrachloroethene	0.27 0.036 0.27 0.040 0.0053 0.04
156-60-5	trans-1,2-Dichloroethene	0.040 3 0.019 0.16 0.010 3 0.0049 0.04 1
79-01-6	Trichloroethene	NB 0.021 0.21 NB 0 0039 0,04 1
75-01-4	Vinyl Chloride	AID 0.022 (0.10u) AID 0.0088 (0.04u)



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve

Site Name	Grand Rapids VI ER	TDD No	505 0001 1505 010
Document Tracking No.	1154B	TDD No.	S05-0001-1605-010
Data Reviewer (signature and date)	Jeoaca A. Vickers October 24, 2016	QC Reviewer (signature and date)	October 25, 2016
Laboratory Report No.	16100673	Laboratory	Bureau Veritas/Novi, MI
Analyses	Volatile organic compounds (VOCs) by EPA I	Method TO-15	
Samples and Matrix	Nine air samples (including two field duplica	ites	
Field Duplicate Pairs	GRPCE-33-IA-BASEMENT)/GRPCE-GRPCE-33-IA-GRPCE-33-IA		NT)-DP and
Field Blanks	None		

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrum	Instrument Performance Checks:		
With		Exceedance/Notes	
Criter	ria	Exceedance/Notes	
Υ			
Initial (Initial Calibration:		

Initial Calibration:

Within Criteria	Exceedance/Notes
Υ	

Continuing Calibration:

Within Criteria	Exceedance/Notes
Υ	

Calibration Verification:

Within Criteria	Exceedance/Notes
NA	

Method blanks:

Within Criteria	Exceedance/Notes
Υ	

Field blanks:

Within Criteria	Exceedance/Notes
NA	



Interference Check Sam	iples (ICS)) (ICP	metals	only):
------------------------	-------------	--------	--------	--------

Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	



	EPA REGION 5 START CONTRACT
Field duplicates:	
Within	Exceedance/Notes
Criteria	
Y	
LCSs/LCSDs:	
Within	Fuencial and Alleton
Criteria	Exceedance/Notes
Υ	
Sample dilutions:	
Within	Formation of Makes
Criteria	Exceedance/Notes
NA	
Re-extraction and reanalysis:	
Within	
Criteria	Exceedance/Notes
NA	
Second column confirmation (GC and H	PLC analyses only):
Within	
Criteria	Exceedance/Notes
NA	
Internal Standards:	
Within	
Criteria	Exceedance/Notes



Target analyte identification	Target	analy	vte i	iden	tifica	ition
-------------------------------	--------	-------	-------	------	--------	-------

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes	
Υ	The laboratory qualified results between the RL and method detection limit as estimated (J).	

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

other [specify].			
Within	Even adams / Nintes		
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:

1	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.		
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.		





Date: 18-Oct-16

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16100673

Sample Identification GRPCE-33-IA

BASEMENT)

Date Sampled: 10/11/2016

Lab Number:

007A

Date Received: 10/12/2016

Sample Type:

Air, Can

Analysis Date: 10/13/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-1.82 psig

Final Pressure:

-1.82 psig

Canister ID:

14025

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Quantum (ppbV)
156-59-2	cis-1,2-Dichloroethene	ND 0.024 (0.164) 100 0 0061 (0044) 1
127-18-4	Tetrachloroethene	0.47 0.036 0.27 0.070 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	4.8 0.019 0.16 1.2 0.0049 0.04 1
79-01-6	Trichloroethene	0.054 J 0.021 0.21 0.010 0.0039 0.04 i
75-01-4	Vinyl Chloride	ND 0.022 0.10 W ND 0 0088 0.04 W 1

^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Vinyl Chloride

Date: 18-Oct-16

Client: Project:	TETRA TECH GRAND RAPIDS EMERGENCY RESPON	SE Work Order No: 16100673
Sample Identi	fication GRPCE-33-IA BASEMENT)-	-DP Date Sampled: 10/11/2016
Lab Number:	008A	Date Received: 10/12/2016
Sample Type:	Air, Can	Analysis Date: 10/13/2016
Test Method:	EPA Method TO-15A	Analyst: DRS
Initial Pressur	re: -1.3 psig	
Final Pressure	e: -1.3 psig	
Canister ID:	14148	
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 (0.164) ND 0.0061 (0.044)
127-18-4	Tetrachloroethene	0.47 0.036 0.27 0.070 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	4.8 0.019 0.16 1.2 0.0049 0.04 1
79-01-6	Trichloroethene	0.054 3 0.021 0.21 0.010 3 0.0039 0.04 1



ND 0 0088

75-01-4

0.022

010L

^{-:} Information not available or not applicable,

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R: RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Sample Identification GRPCE-33-IA

Date: 18-Oct-16

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16100673

Lab Number:

006A

Date Sampled: 10/11/2016

Sample Type:

Date Received: 10/12/2016

Air, Can

Analysis Date: 10/13/2016

Test Method: Initial Pressure: EPA Method TO-15A

Analyst: DRS

Final Pressure:

-1.44 psig -1.44 psig

Canister ID:

14315

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qua
156-59-2	cis-1,2-Dichloroethene	ND 0.024 0.164 ND 0.0061 0.044 1
127-18-4	Tetrachloroethene	0.88 0.036 0.27 0.13 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	7.7 0.019 0.16 1.9 0.0049 0.04 1
79-01-6	Trichloroethene	0.11 3 0.021 0.21 0.020 3 0.039 0.04 1 4
75-01-4	Vinyl Chloride	NB 0.022 (0.10 u) NB 0.0088 (0.04 u) 1



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL: Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E: Value exceeds linear range of calibration curve



Date: 18-Oct-16

Client: TETRA TECH Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16100673

Sample Identification GRPCE-33-IA-1 (BASEMENT)

Date Sampled: 10/11/2016

Lab Number:

004A

Date Received: 10/12/2016

Sample Type:

Air, Can

Analysis Date: 10/13/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure: Final Pressure:

-2.0 psig -2.0 psig

Canister ID:

14548

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qua
156-59-2	cis-1,2-Dichloroethene	₩D 0.024 (0164) ₩ 0.0061 (0.044) 1
127-18-4	Tetrachloroethene	0.54 0.036 0.27 0.080 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	4.2 0.019 0.16 1.1 0.0049 0.04 1
79-01-6	Trichloroethene	0.054 3 0 021 0.21 0.010 3 0.0039 0.04 1
75-01-4	Vinyl Chloride	ND 0.022 (0.10 L) ND 0.0088 (0.04 L) 1



^{-:} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r T; Tentatively Identified Compound (TIC)

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

E; Value exceeds linear range of calibration curve



Date: 18-Oct-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16100673

Sample Identification GRPCE-33-IA-

DP

Date Sampled: 10/11/2016

Lab Number:

005A

Date Received: 10/12/2016

Sample Type:

Air, Can

Analysis Date: 10/13/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-1.93 psig

Final Pressure:

-1.93 psig

Canister ID:

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qu
156-59-2	cis-1,2-Dichloroethene	ND 0.024 (0.164) ND 0 0061 (0.044)
127-18-4	Tetrachloroethene	0.54 0.036 0.27 0.080 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	4.3 0.019 0.16 1.1 0.0049 0.04 1
79-01-6	Trichloroethene	0.054 3 0.021 0.21 0.010 3 0 0039 0.04 1
75-01-4	Vinyl Chloride	NB 0.022 010W NB 00088 0.04W 1



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 18-Oct-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No. 16100673

Sample Identification GRPCE-33-IA- Date Sampled: 10/11/2016

Lab Number: 003A Date Received: 10/12/2016

Sample Type: Air, Can Analysis Date: 10/13/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -2.25 psig
Final Pressure: -2.25 psig
Canister ID: 14290

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m²) (ug/m²) (ug/m²) (ppbV) (ppbV) (ppbV) DF Qu	nat
156-59-2	cis-1,2-Dichloroethene	ND 0.024 0.164 ND 0.0061 0.044 1	
127-18-4	Tetrachloroethene	0.61 0.036 0.27 0.090 0.0053 0.04 1	
156-60-5	trans-1,2-Dichloroethene	1.9 0.019 0.16 0.48 0.0049 0.04 1	
79-01-6	Trichloroethene	0.054 J 0 021 0.21 0.010 J 0 0039 0.04 1	1
75-01-4	Vinyl Chloride	ND 0.022 0.10 ND 0.0088 (0.04L) 1	



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL, Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Trichloroethene

Vinyl Chloride

79-01-6

75-01-4

Date: 18-Oct-16

Client: Project:	TETRA TECH GRAND RAPIDS EMERGENCY RESPONSE			V	Vork Ord	er No:	1610067	3	
Sample Identifi	ication GRPCE-34-IA-11)				Date Sar	npled:	10/11/20	16	
Lab Number:	001A				Date Rec	eived:	10/12/20	16	
Sample Type:	Air, Can				Analysis	Date:	10/13/20	16	
Test Method:	EPA Method TO-15A				Aı	nalyst:	DRS		
Initial Pressure	e: -1.72 psig								
Final Pressure:	-1.72 psig								
Canister ID:	14626								
CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qua
127-18-4	cis-1,2-Dichloroethene Tetrachloroethene trans-1,2-Dichloroethene	0.040 0.68 0.24	0.024 0.036 0.019	0.27	0.010 J 0.10 0.060	0061	0.04 0.04 0.04	1	1

0 11 3

0.021

0.022

0.10 U



0.020 3 0 0039

ND 0 0088

0.04

- -; Information not available or not applicable
- ND: Less than the indicated limit of detection (LOD)
- RL; Report Limit
- J; Value is between the MDL and Reporting Limit, estimated r
- MDL; Method Detection Limit

- B; Analyte detected in the associated Method Blank
- S; Spike Recovery outside accepted recovery limits
- R; RPD outside accepted recovery limits
- T; Tentatively Identified Compound (TIC)
- E: Value exceeds linear range of calibration curve



Date: 18-Oct-16

Client:	TETRA TECH

GRAND RAPIDS EMERGENCY RESPONSE Project:

Work Order No: 16100673

Sample Identification GRPCE-34-IA-

Date Sampled: 10/11/2016

Lab Number:

002A

Date Received: 10/12/2016

Sample Type:

Air, Can

Analysis Date: 10/13/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-1.01 psig

Final Pressure:

-1.01 psig

Canister ID:

CAS#	Analytė	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qua
156-59-2	cis-1.2-Dichloroethene	ND 0.024 (0.164) ND 0.0061 (0.044) 1
127-18-4	Tetrachloroethene	10 0 036 0.27 0.15 0.0053 0.04 1
156-60-5	trans-1,2-Dichlorocthene	0.36 0.019 0.16 0.090 0.0049 0.04 1
79-01-6	Trichloroethene	0.054 3 0 021 0.21 0.010 0.0039 0.04 1
75-01-4	Vinyl Chloride	ND 0.022 (0.10 W) NB 0.0088 (0.04 W) 1



^{-,} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r T; Tentatively Identified Compound (TIC)

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

E; Value exceeds linear range of calibration curve



Date: 18-Oct-16

Client:	TETRA TECH	
Project:	GRAND RAPIDS EMERGENCY RESPO	ONSE Work Order No: 16100673
Sample Ide	entification GRPCE-37-OA	Date Sampled: 10/11/2016
Lab Numbe	er: 009A	Date Received: 10/12/2016
Sample Typ	pe: Air, Can	Analysis Date: 10/13/2016
Test Metho	od: EPA Method TO-15A	Analyst: DRS
Initial Pres	ssure: -1.38 psig	
Final Press	sure: -1.38 psig	
Canister II	D: 14132	
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	NB 0.024 0.164 ND 0.0061 0.044 1
127-18-4	Tetrachloroethene	0.20 1 0.036 0.27 0.030 1 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	ND 0.019 0.164 XD 0.0049 0.044 1
79-01-6	Trichloroethene	0.021 (0.21) 0.0039 0.04 1
75-01-4	Vinyl Chloride	ND 0.022 0.10 NO 0.0088 0.04 / /1



^{-,} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r T; Tentatively Identified Compound (TIC)

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

E; Value exceeds linear range of calibration curve



November 3, 2016

Betsy Nightingale On-Scene Coordinator U.S. Environmental Protection Agency Region 5 9311 Groh Road Grosse Ile, MI 48138-1697

Subject: Data Validation Reports

Grand Rapids VI ER

EPA Contract No. EP-S5-13-01

Technical Direction Document No. S05-0001-1605-010

Document Tracking No. 1190

Dear Ms. Nightingale:

Tetra Tech Inc. (Tetra Tech) is submitting these Data Validation Reports for 16 air samples (including two field duplicates) collected at the Grand Rapids VI ER site. The samples were collected on October 19 and 25, 2016 and were analyzed for volatile organic compounds by Bureau Veritas Laboratories. Tetra Tech received the final data on October 28, 2016.

Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines* (NFG) for Superfund Organic Methods Data Review (August 2014).

No rejection or qualification of results was required for these data sets. The data is usable as reported by the laboratory.

If you have any questions regarding these Data Validation Reports, please call me at (662) 681-5727.

Sincerely,

Jessica A. Vickers START Chemist

Enclosure

cc: Kevin Scott, Tetra Tech Program Manager

Michael Browning, Tetra Tech Project Manager

TDD File

Jesaca a Vickers

ATTACHMENT 1

DATA VALIDATION REPORTS BUREAU VERITAS SDGS 16101178 AND 16101538

Site Name	Grand Rapids VI ER	TDD No.	S05-0001-1605-010
Document Tracking No.	1190A	וטט וויט.	303-0001-1603-010
Data Reviewer (signature and date)	Jeogra A. Vickers November 3, 2016	QC Reviewer (signature and date)	November 3, 2016
Laboratory Report No.	16101178	Laboratory	Bureau Veritas/Novi, MI
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15	
Samples and Matrix	Eight air samples (including a field duplicate	e)	
Field Duplicate Pairs	GRPCE-34-IA- MAIN)/GRPCE-34-IA	(MAIN)-DP	
Field Blanks	None		

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrum	nent	Performance Checks:			
With		Exceedance/Notes			
Criter	ria	Exceedance/Notes			
Υ					
Initial C	^alih	ration			

Initial Calibration:

Within Criteria	Exceedance/Notes
Υ	

Continuing Calibration:

Within Criteria	Exceedance/Notes
Υ	

Calibration Verification:

Within Criteria	Exceedance/Notes
NA	

Method blanks:

Within Criteria	Exceedance/Notes
Υ	

Field blanks:

Within Criteria	Exceedance/Notes
NA	



Interference Check Sam	iples (ICS)) (ICP	metals	only):
------------------------	-------------	--------	--------	--------

Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	



	EPA REGION 5 START CONTRACT
Field duplicates:	
Within	Exceedance/Notes
Criteria	
Y	
LCSs/LCSDs:	
Within	Fuencial and Alleton
Criteria	Exceedance/Notes
Υ	
Sample dilutions:	
Within	Formation of Makes
Criteria	Exceedance/Notes
NA	
Re-extraction and reanalysis:	
Within	
Criteria	Exceedance/Notes
NA	
Second column confirmation (GC and H	PLC analyses only):
Within	
Criteria	Exceedance/Notes
NA	
Internal Standards:	
Within	
Criteria	Exceedance/Notes



Target analyte identification	Target	analy	vte i	iden	tifica	ition
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Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	The laboratory qualified results between the RL and method detection limit as estimated (J).

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

Other labe	
Within	Even adams / Nintes
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:

1	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.
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.





14474

Date: 24-Oct-16

Client: TETRA TECH

Canister ID:

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16101178

Sample Identification GRPCE-34-IA-BASEMENT)

Date Sampled: 10/19/2016

Lab Number: 007A Date Received: 10/19/2016

Sample Type: Air, Can Analysis Date: 10/20/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -1.28 psig

Final Pressure: -1.28 psig

Results MDL RL Results MDL RL CAS# (ug/m³) (ug/m3) (ug/m3) (ppbV) (ppbV) (ppbV) DF Qual Analyte 0.164 (004U 156-59-2 cis-1,2-Dichloroethene HD. 0.024 ND 0.0061 127-18-4 Tetrachloroethene 0.75 0.036 0.27 0.0053 0.04 0.019 trans-1,2-Dichloroethene 0.16 0.0049 0.04 1,4 156-60-5 5.7 0.054 3 0.010 3 0.0039 0.021 0.21 0.04 79-01-6 Trichloroethene ND 0.022 0.101 ND 0 0088 0 0411 75-01-4 Vinyl Chloride



^{-;} Information not available or not applicable.

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 24-Oct-16

Client: TETRA TECH

GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16101178 Project:

Sample Identification GRPCE-34-IA Date Sampled: 10/19/2016 MAIN)

Lab Number: 005A

Date Received: 10/19/2016 Analysis Date: 10/20/2016 Sample Type: Air, Can

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -1.55 psig

Final Pressure: -1.55 psig Canister ID: 14020

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m²) (ug/m²) (ug/m²) (ppbV) (ppbV) (ppbV) DF Qu
156-59-2	cis-1,2-Dichloroethene	ND 0.024 (0164) NB 0 0061 (0.044)
127-18-4	Tetrachloroethene	1.0 0.036 0.27 0.15 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	7.0 0.019 0.16 1.8 0.0049 0.04 1
79-01-6	Trichloroethene	0.16 0.021 0.21 0.030 0 0039 0 04 1
75-01-4	Vinyl Chloride	ND 0.022 0.10 U ND 0.0088 (0.04U) 1



^{-:} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J: Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



14180

Date: 24-Oct-16

Client: TETRA TECH

Canister ID:

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16101178

Sample Identification GRPCE-34-IA MAIN)-DP Date Sampled: 10/19/2016

Lab Number: 006A Date Received: 10/19/2016

Sample Type: Air, Can Analysis Date: 10/20/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -1.85 psig

Final Pressure: -1.85 psig

Results MDL RL Results MDL RL CAS# Analyte (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual cis-1.2-Dichloroethene 0.024 0.164 ND 0.0061 0.044 156-59-2 0.04 127-18-4 Tetrachloroethene 1.1 0.036 0.27 0.16 0.0053 0.019 trans-1,2-Dichloroethene 0.16 1.8 .0049 0.04 156-60-5 7.3 79-01-6 0.16.7 0.021 0.21 0.030 J b.0039 0,04 Trichloroethene ND-0.022 0104 ND 0 0088 0.04 L 75-01-4 Vinyl Chloride



^{-;} Information not available or not applicable.

ND: Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 24-Oct-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16101178

Sample Identification GRPCE-34-IA-1168(BASEMENT)

Date Sampled: 10/19/2016

Lab Number: 004A

004A Date Received: 10/19/2016

Sample Type: Air, Can Analysis Date: 10/20/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -1.56 psig

14179

Final Pressure: -1.56 psig

Canister ID:

Results MDL RI. Results MDL RL (ug/m3) (ug/m3) (ug/m³) (ppbV) (ppbV) (ppbV) CAS# Analyte DF Qual (0.164) NB 0 0061 0.044 156-59-2 cis-1,2-Dichloroethene 0.024 Tetrachloroethene 0.036 0.27 0.12 0.0053 0.04 127-18-4 0.81 0.019 0.04 0.16 1.3 0.0049 trans-1,2-Dichloroethene 5.1 156-60-5 0.21 79-01-6 Trichloroethene 0.054 J 0 021 0.010 30.0039 0.04 0.04 L ND 0.022 0.10 L 8800 0 GIA-75-01-4 Vinyl Chloride



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 24-Oct-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16101178

Sample Identification GRPCE-34-

RPCE-34Date Sampled: 10/19/2016

Lab Number: 003A Date Received: 10/19/2016

Sample Type: Air, Can Analysis Date: 10/20/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -1.93 psig
Final Pressure: -1.93 psig

Canister ID: 14031

TANK THE STATE OF										
CAS#	Analyte	Results (ug/m³		MDL ig/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	eis-1,2-Dichloroethene	*	2	0.024	0.161	() NE	0.0061	0.044	01	
127-18-4	Tetrachloroethene	0.75		0.036	0.27	0.11	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	0.59		0.019	0.16	0.15	0.0049	0.04	1	
79-01-6	Trichloroethene	0.054	J	0.021	0.21	0.010 3	0.0039	0.04	D	8
75-01-4	Vinyl Chloride	44	B-	0.022	0.107	A ME	0 0088	(0'04L	1)1	



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 24-Oct-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16101178

Sample Identification GRPCE-35-IA- 1) Date Sampled: 10/19/2016

Lab Number: 001A

14007

001A Date Received: 10/19/2016

Sample Type: Air, Can Analysis Date: 10/20/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -2.47 psig
Final Pressure: -2.47 psig

Canister ID:

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	0.079 3 0.024 0.16 0.020 3 .0061 0.04	1	1
127-18-4	Tetrachloroethene	0.68 0.036 0.27 0.10 0.0053 0.04	1	
156-60-5	trans-1,2-Dichloroethene	0.079 3 0.019 0.16 0.020 3 0.0049 0.04	1	4
79-01-6	Trichloroethene	0.16 3 0.021 0.21 0.030 3 0.0039 0.04	_ 1	1
75-01-4	Vinyl Chloride	ND 0.022 (0.10 L) ND 0.0088 (0.04 L	1)1	



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 24-Oct-16

Analyst: DRS

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16101178

Sample Identification GRPCE-35-IA-Date Sampled: 10/19/2016

Lab Number:

EPA Method TO-15A

002A Date Received: 10/19/2016

Sample Type: Air, Can

Test Method:

Analysis Date: 10/20/2016

Initial Pressure: -1.44 psig Final Pressure: -1.44 psig

Canister ID:	14471	
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 0.164 ND 0 0061 (0.044) 1
127-18-4	Tetrachloroethene	0.95 0.036 0.27 0.14 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	0.48 0.019 0.16 0.12 0.0049 0.04 1
79-01-6	Trichloroethene	0 054 3 0 021 0.21 0.010 3 0.0039 0.04 1
75-01-4	Vinyl Chloride	ND 0 022 0.10 ND 0 0088 0.04 U 1



- --, Information not available or not applicable.
- ND; Less than the indicated limit of detection (LOD)
- RL; Report Limit
- J: Value is between the MDL and Reporting Limit, estimated r
- MDL; Method Detection Limit

- B; Analyte detected in the associated Method Blank
- S; Spike Recovery outside accepted recovery limits
- R; RPD outside accepted recovery limits
- T; Tentatively Identified Compound (TIC)
- E; Value exceeds linear range of calibration curve



Date: 24-Oct-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16101178

Sample Identification GRPCE-38-OA-

Lab Number: 008A Date Received: 10/19/2016

Sample Type: Air, Can Analysis Date: 10/20/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -1.1 psig
Final Pressure: -1.1 psig

Canister ID: 14584

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 0.16 4 ND 0 0061 0.044 1
127-18-4	Tetrachloroethene	0.34 0.036 0.27 0.050 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	ND 0.019 0.16 W AND 0.0049 0.04 W
79-01-6	Trichloroethene	0.054 J 0.021 0.21 0.010 J 0.0039 0.04
75-01-4	Vinyl Chloride	NH 0.022 010 L) ND 0.0088 0.04 L)



^{-;} Information not available or not applicable.

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve

Site Name	Grand Rapids VI ER	TDD No.	S05-0001-1605-010		
Document Tracking No.	1190B	TDD NO.	303-0001-1603-010		
Data Reviewer (signature and date)	Jeogra A. Vickers November 3, 2016	QC Reviewer (signature and date)	November 3, 2016		
Laboratory Report No.	Laboratory Report No. 16101538		Bureau Veritas/Novi, MI		
Analyses	Volatile organic compounds (VOCs) by EPA Method TO-15				
Samples and Matrix	Eight air samples (including a field duplicate)				
Field Duplicate Pairs	GRPCE-36-IA- 1)/GRPCE-36-IA- 1)-DP				
Field Blanks None					

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrum	Instrument Performance Checks:		
With		Exceedance/Notes	
Criter	ria	Exceedance/Notes	
Υ			
Initial C	Initial Calibration		

Initial Calibration:

Within Criteria	Exceedance/Notes
Υ	

Continuing Calibration:

Within Criteria	Exceedance/Notes
Υ	

Calibration Verification:

Within Criteria	Exceedance/Notes
NA	

Method blanks:

Within Criteria	Exceedance/Notes
Υ	

Field blanks:

Within Criteria	Exceedance/Notes
NA	



Interference Check Sam	iples (ICS)) (ICP	metals	only):
------------------------	-------------	--------	--------	--------

Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	



	EPA REGION 5 START CONTRACT
Field duplicates:	
Within	Exceedance/Notes
Criteria	
Y	
LCSs/LCSDs:	
Within	Fuencial and Alleton
Criteria	Exceedance/Notes
Υ	
Sample dilutions:	
Within	Formation of Makes
Criteria	Exceedance/Notes
NA	
Re-extraction and reanalysis:	
Within	
Criteria	Exceedance/Notes
NA	
Second column confirmation (GC and H	PLC analyses only):
Within	
Criteria	Exceedance/Notes
NA	
Internal Standards:	
Within	
Criteria	Exceedance/Notes



Target analyte identification	Target	analy	vte i	iden	tifica	ition
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Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes	
Υ	The laboratory qualified results between the RL and method detection limit as estimated (J).	

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

Other labe	one [beeny].				
Within	Even dones /Netes				
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:

1	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.
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.





-1.71 psig

Date: 27-Oct-16

Client: TETRA TECH

Final Pressure:

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16101538

Sample Identification GRPCE-35-IA-BASEMENT)

Date Sampled: 10/25/2016

Lab Number: 007A Date Received: 10/25/2016

Lab Number: 007A Date Received: 10/25/2016
Sample Type: Air, Can Analysis Date: 10/26/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -1.71 psig

Canister ID: 13934

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF	Qual
156-59-2	cis-1,2-Dichloroethene	NO 0.024 (0.16L) NO 0.0061 (0.04L) 1	
127-18-4	Tetrachloroethene	0.54 0.036 0.27 0.080 0.0053 0.04 1	
156-60-5	trans-1,2-Dichlorocthene	3.6 0.019 0.16 0.90 0.0049 0.04 1	
79-01-6	Trichloroethene	0.054 3 0.021 0.21 0.010 3 0.0039 0.04 1	X
75-01-4	Vinyl Chloride	ND 0.022 0.104 ND 0.0088 (0.044) 1	



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 27-Oct-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16101538

Sample Identification GRPCE-35-IA-

MAIN) Date Sampled: 10/25/2016

Lab Number:

006A

Date Received: 10/25/2016

Sample Type:

Air, Can

Analysis Date: 10/26/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure: Final Pressure: -0.39 psig

Canister ID:

		Results MDL RL Results MDL RL
CAS#	Analyte	(ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qu
156-59-2	eis-1,2-Dichloroethene	ND 0.024 0.16 U ND 0.0061 0.04 U 1
127-18-4	Tetrachloroethene	0 20 3 0.036 0.27 (0.030 3 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	0.52 0.019 0.16 0.13 0.0049 0.04 1
79-01-6	Trichloroethene	0.054 5 0 021 0.21 0.010 5 0.0039 0.04 1
75-01-4	Vinyl Chloride	ND 0.022 (0.10 L) ND 0 0088 (0.04 L) 1



^{-;} Information not available or not applicable.

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 27-Oct-16

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16101538

Sample Identification GRPCE-35-IA-

Date Sampled: 10/25/2016

Lab Number:

005A

Date Received: 10/25/2016

Sample Type:

Air, Can

Analysis Date: 10/26/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-1.83 psig

Final Pressure:

-1.83 psig

Canister ID:

CAS#	Analyte		(IDL ig/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	(0.040 J	0.024	0.16	(0.010 J	0061	0.04	1	8
127-18-4	Tetrachloroethene	0.61	0.036	0.27	0.090	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	3.0	0.019	0.16	0.75	0.0049	0.04	1	
79-01-6	Trichloroethene	0 054 J	0 021	0.21	0.010 J	0 0039	0.04	1	1
75-01-4	Vinyl Chloride	ND-	0 022	0.10	diff.	0 0088	0.04 L	N	



J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 27-Oct-16

Date Sampled: 10/25/2016

Date Received: 10/25/2016

Analysis Date: 10/26/2016

Analyst: DRS

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16101538

Sample Identification GRPCE-35-IA-

Lab Number: 004A

Air, Can

Sample Type:

Test Method: EPA Method TO-15A

Initial Pressure: Final Pressure: -2.03 psig

-2.03 psig

Canister ID:

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF	Qua
156-59-2	cis-1,2-Dichloroethene	NH 0.024 (0.164) NH 0 0061 (0.044) I	
127-18-4	Tetrachloroethene	0.54 0.036 0.27 0.080 0.0053 0.04 1	
156-60-5	trans-1,2-Dichlorocthene	2.9 0.019 0.16 0.74 0.0049 0.04 1	
79-01-6	Trichloroethene	0.054 J 0 021 0.21 0.010 J 0 0039 0.04 1	1
75-01-4	Vinyl Chloride	ND 0.022 0.10 ND 0.088 0.04 D 1	



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 27-Oct-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16101538

Sample Identification GRPCE-36-IA- 1) Date Sampled: 10/25/2016

Lab Number: 001A Date Received: 10/25/2016

Sample Type: Air, Can Analysis Date: 10/26/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -2.49 psig
Final Pressure: -2.49 psig

Canister ID: 14069

CAS#	Analyte		MDL ug/m³)	RL (ug/m³)	Results (pphV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	(0 040 J	0 024	0.16	[0.010 J	0.0061	0.04	1	1
127-18-4	Tetrachloroethene	0 54	0 036	0.27	0.080	0053	0.04	I	
156-60-5	trans-1,2-Dichloroethene	0 32	0 019	0.16	0.080	0.0049	0.04	1	
79-01-6	Trichloroethene	0115	0 021	0.21	0.020 J	1.0039	0.04	1	1
75-01-4	Vinyl Chloride	नार	0.022	0.10	A) ND	0.0088	0 04L)1	



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 27-Oct-16

Client: **TETRA TECH**

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16101538

Sample Identification GRPCE-36-IA-1)-DP

Lab Number: 002A Date Sampled: 10/25/2016

Date Received: 10/25/2016

Sample Type:

Air, Can

Analysis Date: 10/26/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure: Final Pressure:

-1.89 psig -1.89 psig

Canister ID:

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qu
156-59-2	cis-1,2-Dichloroethene	NB 0.024 0.16 W ND 0.0061 0.04 W I
127-18-4	Tetrachloroethene	0.47 0.036 0.27 0.070 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	0.32 0.019 0.16 0.080 0.0049 0.04 1
79-01-6	Trichlorocthene	0.054 5 0 021 0.21 0.010 5 0.0039 0.04 1
75-01-4	Vinyl Chloride	ND 0.022 0.10U ND 0.0088 0.04 U 1



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 27-Oct-16

Client:	TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16101538

Sample Identification GRPCE-36-IA-2)

Date Sampled: 10/25/2016

Lab Number:

003A

Date Received: 10/25/2016

Sample Type:

Air, Can

Analysis Date: 10/26/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-2.19 psig

Final Pressure:

-2.19 psig

Canister ID:

Canister 1D	14028		
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m²) (ug/m²) (ug/m²) (ppbV) (ppbV) (ppbV) DF Qu	al
156-59-2	cis-1,2-Dichloroethene	NB 0.024 (0.164) ND 0.0061 (0.044)	
127-18-4	Tetrachloroethene	1.2 0.036 0.27 0.18 0.0053 0.04 1	
156-60-5	trans-1,2-Dichloroethene	1.3 0.019 0.16 0.32 0.0049 0.04 1	
79-01-6	Trichloroethene	0.054 J 0.021 0.21 0.010 J 0.0039 0.04 1 V	1
75-01-4	Vinyl Chloride	ND 0.022 (0.104) ND 0.0088 (0.044) 1	



J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



-0.34 psig

Date: 27-Oct-16

Client: **TETRA TECH**

Final Pressure:

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16101538

Sample Identification GRPCE-39-OA Date Sampled: 10/25/2016

Lab Number: 008A Date Received: 10/25/2016

Sample Type: Air, Can Analysis Date: 10/26/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -0.34 psig

Canister ID: 14143

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 0.164 ND 0 0061 (0.044)
127-18-4	Tetrachlorocthene	0.27 0.036 0.27 0.040 0.0053 0.04
156-60-5	trans-1,2-Dichloroethene	ND 0019 0.164 ND 00049 0.044 1
79-01-6	Trichloroethene	0.054 3 0 021 0.21 0.010 3 0.0039 0.04 1
75-01-4	Vinyl Chloride	ND 0.022 0.104 NB 0.0088 0.0441



^{--;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r T; Tentatively Identified Compound (TIC)

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

E; Value exceeds linear range of calibration curve



November 14, 2016

Betsy Nightingale On-Scene Coordinator U.S. Environmental Protection Agency Region 5 9311 Groh Road Grosse Ile, MI 48138-1697

Subject: Data Validation Reports

Grand Rapids VI ER

EPA Contract No. EP-S5-13-01

Technical Direction Document No. S05-0001-1605-010

Document Tracking No. 1249

Dear Ms. Nightingale:

Tetra Tech Inc. (Tetra Tech) is submitting these Data Validation Reports for 15 air samples (including one field duplicate) collected at the Grand Rapids VI ER site. The samples were collected on November 3 and 8, 2016 and were analyzed for volatile organic compounds by Bureau Veritas Laboratories. Tetra Tech received the final data on November 11, 2016.

Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines* (NFG) for Superfund Organic Methods Data Review (August 2014).

No rejection of results was required for this data set. The data is usable as qualified based on the findings of this validation effort.

If you have any questions regarding these Data Validation Reports, please call me at (662) 681-5727.

Sincerely,

Jessica A. Vickers START Chemist

Enclosure

cc: Kevin Scott, Tetra Tech Program Manager

Michael Browning, Tetra Tech Project Manager

TDD File

Jesaca a Vickers

ATTACHMENT 1

DATA VALIDATION REPORTS BUREAU VERITAS SDGS 16110327 AND 16110548

Site Name	Grand Rapids VI ER	TDD No.	S05-0001-1605-010	
Document Tracking No.	1249A	וטט ווסט.		
Data Reviewer (signature and date)	Jeoaca A. Vickers November 14, 2016	Technical Reviewer (signature and date)	Hang N. Elis III 14 November 2016	
Laboratory Report No.	16110327	Laboratory	Bureau Veritas/Novi, MI	
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15		
Samples and Matrix	Seven air samples			
Field Duplicate Pairs	None			
Field Blanks	None			

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrum	nent	Performance Checks:	
With		Exceedance/Notes	
Criter	ria	Exceedance/Notes	
Υ			
Initial (Initial Calibration:		

Initial Calibration:

Within Criteria	Exceedance/Notes
Υ	

Continuing Calibration:

Within Criteria	Exceedance/Notes
Υ	

Calibration Verification:

Within Criteria	Exceedance/Notes
NA	

Method blanks:

Within Criteria	Exceedance/Notes
Υ	

Field blanks:

Within Criteria	Exceedance/Notes
NA	



Interference Check Sam	iples (ICS)) (ICP	metals	only):
------------------------	-------------	--------	--------	--------

Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

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
NA	
LCSs/LCSDs:	
Within Criteria	Exceedance/Notes
Υ	
Sample dilution	ns:
Within Criteria	Exceedance/Notes
NA	
Re-extraction a	nd reanalysis:
Within Criteria	Exceedance/Notes
NA	
Second column	confirmation (GC and HPLC analyses only):
Within Criteria	Exceedance/Notes
NA	
Internal Standa	ırds:
Within Criteria	Exceedance/Notes



Target analyte identification	Target	analy	vte i	iden	tifica	ition
-------------------------------	--------	-------	-------	------	--------	-------

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	The laboratory qualified results between the RL and method detection limit as estimated (J).

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

Other labe	
Within	Fyeodones/Netes
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:

1	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.
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.





Date: 08-Nov-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16110327

Sample Identification GRPCE-36-IA BASEMENT)

Date Sampled: 11/3/2016

Lab Number:

006A

Date Received: 11/3/2016

Sample Type:

Air, Can

Analysis Date: 11/7/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-1.72 psig

Final Pressure:

-1.72 psig

Canister ID:

14052

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	2017	0.024	0.16	u) NE	0 0061	(6044	1	
127-18-4	Tetrachloroethene	0.61	0.036	0.27	0.090	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	4.8	0.019	0.16	1.2	0.0049	0.04	1	
79-01-6	Trichloroethene	0,70	0.021	0.21	0.13	0.0039	0.04	1	
75-01-4	Vinyl Chloride	Ne	0.022	0.10	U) HE	0 0088	(0.04L)1	



^{-;} Information not available or not applicable.

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 08-Nov-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16110327

Sample Identification GRPCE-36-IA

MAIN)

Date Sampled: 11/3/2016

Lab Number: 005A

Date Received: 11/3/2016

Sample Type:

Air, Can

Analysis Date: 11/7/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-1.63 psig

Final Pressure:

-1.63 psig

Canister ID:

14048

		Results	MDL	RL	Results	MDL	RL		
CAS#	Analyte	(ng/m³)	(ug/m³)	(ug/m³)	(ppbV)	(ppbV)	(ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	ND	0.024	0.16	W NE	0.0061	0.044	71	
127-18-4	Tetrachloroethene	1.0	0.036	0.27	0.15	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	5.5	0.019	0.16	1.4	0.0049	0.04	-1	
79-01-6	Trichloroethene	0.54	0.021	0.21	0.10	0.0039	0.04	. 0	
75-01-4	Vinyl Chloride	- CHA	0.022	0.10	914 (U	► 0 0088	0.04 L		



^{-;} Information not available or not applicable.

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 08-Nov-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16110327

Sample Identification GRPCE-36-IA-1

Lab Number: 004A Date Received: 11/3/2016

Sample Type: Air, Can Analysis Date: 11/7/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -1.73 psig
Final Pressure: -1.73 psig

Canister ID: 14049

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	ND	0.024	(016	W ME	0.0061	0.04U)1	
127-18-4	Tetrachlorocthene	0.68	0.036	0.27	0.10	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	4,2	0.019	0.16	1.1	0.0049	0.04	1	
79-01-6	Trichloroethene	0.91	0.021	0.21	0.17	0.0039	0.04	1	
75-01-4	Vinyl Chloride	ND	0.022	0.10	U) NE	0 0088	0.04)1	



^{-;} Information not available or not applicable.

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 08-Nov-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16110327

Sample Identification GRPCE-36-IA-Date Sampled: 11/3/2016

Lab Number: 003A Date Received: 11/3/2016

Sample Type: Air, Can Analysis Date: 11/7/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -1.94 psig

Final Pressure: -1.94 psig

Canister ID: 13927

CAS#	Analyte	Results (ug/m²)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	ND	0.024	0.16	W NH	0.0061	(0.04 L	01	
127-18-4	Tetrachloroethene	0.61	0.036	0.27	(0.090	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	1.1	0.019	0.16	0.29	0.0049	0.04	1	
79-01-6	Trichlorocthene	4.9	0.021	0.21	0.91	0.0039	0.04	1	
75-01-4	Vinyl Chloride	AND	0.022	0.10	Nitt	0.0088	0.04/1		



^{-,} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 08-Nov-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16110327

Sample Identification GRPCE-37-IA 1) Date Sampled: 11/3/2016

Lab Number: 001A Date Received: 11/3/2016

Sample Type: Air, Can Analysis Date: 11/7/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -2.0 psig
Final Pressure: -2.0 psig

Canister ID: 14022

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichlorocthene	0.040	0.024	0.16	(0.010J	0.0061	0.04	1	8
127-18-4	Tetrachloroethene	0.47	0.036	0.27	0.070	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	0.079 3	0.019	0.16	0.020 3	0.0049	0.04	1	1
79-01-6	Trichlorocthene	0.32	0.021	0.21	0.060	0.0039	0.04	_ 1	
75-01-4	Vinyl Chloride	410	0.022	0.10	U NB	- 0 0088	0.044	1	



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E, Value exceeds linear range of calibration curve



Date: 08-Nov-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16110327

Sample Identification GRPCE-37-1A 2) Date Sampled: 11/3/2016

Lab Number: 002A Date Received: 11/3/2016

Sample Type: Air, Can Analysis Date: 11/7/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -2.49 psig
Final Pressure: -2.49 psig

Canister ID: 14542

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m²) (ug/m²) (ug/m²) (ppbV) (ppbV) (ppbV) DF Q	ual
156-59-2	cis-1,2-Dichloroethene	NO 0.024 (0.164) NO 0 0061 (0.044) 1	
127-18-4	Tetrachlorocthene	1.5 0.036 0.27 0.22 0.0053 0.04 1	
156-60-5	trans-1,2-Dichlorocthene	0.63 0.019 0.16 0.16 0.0049 0.04 1	
79-01-6	Trichloroethene	1.5 0.021 0.21 0.28 0.0039 0.04 1	
75-01-4	Vinyl Chloride	ND 0.022 0.10L) ND 0 0088 0.04L	



^{-:} Information not available or not applicable.

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 08-Nov-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16110327

Sample Identification GRPCE-40-OA-1

Date Sampled: 11/3/2016

Lab Number:

007A

Sample Type:

Air, Can

Date Received: 11/3/2016

Test Method:

EPA Method TO-15A

Analysis Date: 11/7/2016 Analyst: DRS

Initial Pressure:

-0.99 psig

Final Pressure:

-0.99 psig

Canister ID	: 13945	
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m²) (ug/m²) (ug/m²) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 (0.164) ND 0 0061 (0.044) 1
127-18-4	Tetrachloroethene	0.14 J 0 036 0.27 (0.020 J 0.0053 0.04 1 8
156-60-5	trans-1,2-Dichlorocthene	HD 0.019 0.16U ND 0.049 0.04U 1
79-01-6	Trichloroethene	0.054 3 0.021 0.21 0.010 3 0.0039 0.04 1
75-01-4	Vinyl Chloride	ND- 0.022 0.1014 ND- 0.0088 0.04 W



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve

Site Name	Grand Rapids VI ER	TDD No.	COE 0001 1COE 010
Document Tracking No.	1249B	TDD No.	S05-0001-1605-010
Data Reviewer (signature and date)	Jeogra A. Vickers November 14, 2016	Technical Reviewer (signature and date)	Hang N. Elis III 14 November 2016
Laboratory Report No.	16110548	Laboratory	Bureau Veritas/Novi, MI
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15	
Samples and Matrix	Eight air samples (including a field duplicate	<u>e)</u>	
Field Duplicate Pairs	GRPCE-37-IA-BASEMENT)/GRPCE	-37-IA-BASEME	NT)-DP
Field Blanks	None		

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection of results was required for this data set. The data is usable as qualified based on the findings of this validation effort.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrument Performance Checks:

Within Criteria	Exceedance/Notes
Υ	

Initial Calibration:

Within Criteria	Exceedance/Notes
Υ	

Continuing Calibration:

Within Criteria	Exceedance/Notes
Υ	

Calibration Verification:

Within Criteria	Exceedance/Notes
NA	

Method blanks:

Within Criteria	Exceedance/Notes
N	The method blank contained trans-1,2-dichloroethene below the reporting limit (RL); therefore, the trans-1,2-dichloroethene results for GRPCE-38-IA- 1) and GRPCE-41-OA- were raised to the RL and qualified as non-detect (U). No further qualifications were required because the associated results were greater than ten times the blank concentration.



	EIA REGION S START CONTRACT	
Field blank	s:	
Within Criteria	Exceedance/Notes	
NA		
Interferenc	te Check Samples (ICS) (ICP metals only):	
Within Criteria	Exceedance/Notes	
NA		
	nitoring compounds (surrogates and labeled compounds):	
Within Criteria	Exceedance/Notes	
Y		
'		
MS/MSD:		
Within Criteria	Exceedance/Notes	
NA		
Post digest	ion spikes:	
Within	Exceedance/Notes	
Criteria		
NA		
Serial diluti	ions:	
Within Criteria	Exceedance/Notes	



NA

Laboratory duplicate	es:
Within	Even dames /Netes
Criteria	Exceedance/Notes
NA	
Field duplicates:	
Within	Exceedance/Notes
Criteria	Exacedance, Notes
Υ	
LCSs/LCSDs:	
Within	
Criteria	Exceedance/Notes
Y	
Sample dilutions:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
NA	
B	
Re-extraction and re	analysis: ———————————————————————————————————
Within	Exceedance/Notes
Criteria	
NA	
Second column conf	irmation (GC and HPLC analyses only):
Within	
Cuitania	Exceedance/Notes



Criteria NA

Internal Standards:

Within Criteria	Exceedance/Notes
Υ	

Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	The laboratory qualified results between the RL and method detection limit as estimated (J).

Tentatively identified compounds:

	,
Within	Even dance / Notes
Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within	Exceedance/Notes
Criteria	
Υ	

Other [specify]:

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:

1	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.
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.





Date: 10-Nov-16

Client: **TETRA TECH**

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16110548

Sample Identification GRPCE-37-IA

BASEMENT)

Date Sampled: 11/8/2016

Lab Number:

006A

Date Received: 11/9/2016

Sample Type:

Air, Can

Analysis Date: 11/9/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-2.0 psig -2.0 psig

Final Pressure: Canister ID:

14543

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF	Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 (0.164) ND 0.0061 (0.044)	
127-18-4	Tetrachloroethene	0.61 0.036 0.27 0.090 0.0053 0.04	
156-60-5	trans-1,2-Dichloroethene	4.0 0.019 0.16 1.0 0.0049 0.04 1	
79-01-6	Trichloroethene	0.27 0.021 0.21 0.050 0.0039 0.04 1	
75-01-4	Vinyl Chloride	AID 0.022 (0.104) AID 0.0088 (0.044) 1	



^{-,} Information not available or not applicable.

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 10-Nov-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16110548

Sample Identification GRPCE-37-IA (BASEMENT)-DP

Date Sampled: 11/8/2016

Lab Number:

007A

Date Received: 11/9/2016

Sample Type:

Air, Can

Test Method:

EPA Method TO-15A

Analysis Date: 11/10/2016 Analyst: DRS

Initial Pressure:

-2.47 psig

Final Pressure:

-2.47 psig

Canister ID:

14627

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qu
156-59-2	cis-1,2-Dichloroethene	ND 0.024 (0.164) ND 0.0061 (0.044)1
127-18-4	Tetrachloroethene	0.61 0.036 0.27 (0.090 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	4.0 0.019 0.16 1.0 0.0049 0.04 1
79-01-6	Trichloroethene	0.27 0.021 0.21 0.050 0.0039 0.04 1
75-01-4	Vinyl Chloride	ND 0.022 0.10 ND 0 0088 0.04 1



^{-;} Information not available or not applicable.

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Vinyl Chloride

75-01-4

Date: 10-Nov-16

Client:		TETRA TECH									
Project:		GRAND RAPIDS EMERGENCY RES	PONSE				Work Or	der No:	1611054	8	
Sample Ider	ntificatio	on GRPCE-37-IA MAIN)					Date Sa	impled:	11/8/201	6	
Lab Numbe	r:	005A					Date Ro	eccived:	11/9/201	6	
Sample Typ	e:	Air, Can					Analys	is Date:	11/9/201	6	
Test Method	d:	EPA Method TO-15A					A	analyst:	DRS		
Initial Press	ure:	-2.9 psig									
Final Pressu	ire:	-2.9 psig									
Canister ID	:	13989									
CAS#		Analyte		Results (ug/m²)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,	2-Dichloroethene		NB	0.024	0.16	U) NE	0 0061	(0.04L	01	
127-18-4	Tetra	chloroethene		0.95	0.036	0.27	0.14	0.0053	0.04	1	
156-60-5	trans-	1.2-Dichlorocthene		5.2	0.019	0.16	1,3	0.0049	0.04	1	
79-01-6	Trich	loroethene		0.21	0.021	0.21	0.040	0.0039	0.04	- 1	



ND 0 0088 /

0.022

^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



trans-1,2-Dichloroethene

Trichloroethene

Vinyl Chloride

Date: 10-Nov-16

Client:	TETRA TECH		
Project:	GRAND RAPIDS EMERGENCY RESPONSE	Work	Order No: 16110548
Sample Identifica	tion GRPCE-37-	Date	e Sampled: 11/8/2016
Lab Number:	004A	Date	Received: 11/9/2016
Sample Type:	Air, Can	Ana	lysis Date: 11/9/2016
Test Method:	EPA Method TO-15A		Analyst: DRS
Initial Pressure:	-1.87 psig		
Final Pressure:	-1.87 psig		
Canister ID:	14002		
CAS#	Analyte	Results MDL RL Resu (ug/m³) (ug/m³) (ug/m³) (ppb	
	1,2-Dichloroethene rachloroethene	0.68 0.036 0.27 0.16	0.0061 0.04 1 0.0053 0.04 1



0.0049

0.0039

ND 0 0088 (0.044)

0.04

0.04

156-60-5

79-01-6

75-01-4

0.019

0.021

0.022

0.16 0.87

0.10 W

0.060

0.21

^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 10-Nov-16

Date Received: 11/9/2016

Analysis Date: 11/9/2016

Analyst: DRS

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16110548

Sample Identification GRPCE-37-IA-1 Date Sampled: 11/8/2016

Sample Identification GRI CE-57-1A-

003A

Sample Type: Air, Can

Lab Number:

Test Method: EPA Method TO-15A

Initial Pressure: -2.81 psig

Final Pressure: -2.81 psig

Canister ID: 14632

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1.2-Dichloroethene	ND		(0.16	W NE	0.0061	(0.04 U)1	
127-18-4	Tetrachloroethene	0.68	0.036		0.10	0.0053	0.04	1	
156-60-5	trans-1,2-Dichlorocthene	1.3	0.019	0.16	0.34	0.0049	0.04	1	
79-01-6	Trichloroethene	(1.1)	0.021	0.21	0.20	0.0039	0.04	1	
75-01-4	Vinyl Chloride	}\D	0.022	0.10	CH4 CD	0 0088	0.04L)L	



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J: Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 10-Nov-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16110548

Sample Identification GRPCE-38-IA Date Sampled: 11/8/2016

Lab Number: 001A

001A Date Received: 11/9/2016
Air, Can Analysis Date: 11/9/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -0.53 psig
Final Pressure: -0.53 psig

Canister ID: 14177

Sample Type:

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qua
156-59-2	cis-1,2-Dichloroethene	(0 079 \$\) 0 024 0.16 (0.020 \$\) 0.0061 0.04 1 \$\)
127-18-4	Tetrachloroethene	0.75 0.036 0.27 0.11 0.0053 0.04 1
156-60-5	trans-1,2-Dichlorocthene	-0.12 0.019 0.164 0.049 0.044 1 /
79-01-6	Trichloroethene	0.21 0.021 0.21 0.040 0.0039 0.04 1
75-01-4	Vinyl Chloride	ND 0.022 0.10 U ND 0.0088 0.04 U I



J; Value is between the MDL and Reporting Limit, estimated r MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



14157

Date: 10-Nov-16

Client: TETRA TECH

Canister ID:

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16110548

Sample Identification GRPCE-38-IA-1 Date Sampled: 11/8/2016

Lab Number: 002A Date Received: 11/9/2016

Sample Type: Air, Can Analysis Date: 11/9/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -2.79 psig

Final Pressure: -2.79 psig

RL Results MDL RL Results MDL CAS# (ug/m³) (ug/m3) (ug/m3) (ppbV) (ppbV) (ppbV) DF Qual Analyte MD 0 0061 0.044 156-59-2 cis-1,2-Dichloroethene 0.024 0.1614 ND 0.04 127-18-4 Tetrachloroethene 13 0.036 0.27 0.19 0.0053 156-60-5 trans-1,2-Dichloroethene 0.79 0.019 0.16 0.20 0.0049 0.04 79-01-6 0.48 0.021 0.21 0.090 0.0039 0.04 Trichloroethene ND. NO 0 0088 0.04L 75-01-4 Vinyl Chloride 0.022 0.10



^{-;} Information not available or not applicable.

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 10-Nov-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16110548

Sample Identification GRPCE-41-OA- Date Sampled: 11/8/2016

Lab Number: 008A Date Received: 11/9/2016

Sample Type: Air, Can Analysis Date: 11/10/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -0.83 psig

Final Pressure: -0.83 psig

Canister ID: 13940

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m²) (ug/m²) (ug/m²) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 0.164 ND 0.0061 0.044 1
127-18-4	Tetrachloroethene	0.54 0.036 0.27 (0.080 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	0.019 0.16 (10.010 0.0049 0.014) 1 /
79-01-6	Trichloroethene	0.054 3 0.021 0.21 0.010 3 0.0039 0.04 1
75-01-4	Vinyl Chloride	ND 0.022 (0.104) ND 0.0088 (0.044) 1



^{-;} Information not available or not applicable.

J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



November 18, 2016

Betsy Nightingale On-Scene Coordinator U.S. Environmental Protection Agency Region 5 9311 Groh Road Grosse Ile, MI 48138-1697

Subject: Data Validation Report

Grand Rapids VI ER

EPA Contract No. EP-S5-13-01

Technical Direction Document No. S05-0001-1605-010

Document Tracking No. 1290

Dear Ms. Nightingale:

Tetra Tech Inc. (Tetra Tech) is submitting this Data Validation Report for eight air samples collected at the Grand Rapids VI ER site. The samples were collected on November 8, 2016 and were analyzed for volatile organic compounds by Eurofins-Air Toxics Laboratory. Tetra Tech received the final data on November 14, 2016.

Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines* (NFG) for Superfund Organic Methods Data Review (August 2014).

No rejection of results was required for this data set. The data is usable as qualified based on the findings of this validation effort.

If you have any questions regarding this Data Validation Report, please call me at (662) 681-5727.

Sincerely,

Jessica A. Vickers START Chemist

Enclosure

cc: Kevin Scott, Tetra Tech Program Manager

Michael Browning, Tetra Tech Project Manager

TDD File

Jesaca a Vickers

ATTACHMENT 1

DATA VALIDATION REPORT EUROFINS-AIR TOXICS SDG 1611159

Site Name	Grand Rapids VI ER	TDD No.	SOF 0001 160F 010
Document Tracking No.	1290	TOD NO.	S05-0001-1605-010
Data Reviewer (signature and date)	Jeogea A. Vickers November 18, 2016	QC Reviewer (signature and date)	November 18, 2016
Laboratory Report No.	1611159	Laboratory	Eurofins-Air Toxics/Folsom, CA
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15	
Samples and Matrix	Eight air samples		
Field Duplicate Pairs	GRPCE-06-IA-W)/GRPCE-0	6-IA-	-DP
Field Blanks	None		

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection of results was required for this data set. The data is usable as qualified based on the findings of this validation effort.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrument Performance Checks:

Within Criteria	Exceedance/Notes
Υ	

Initial Calibration:

Within Criteria	Exceedance/Notes
N	The percent relative standard deviations for cis-1,2-dichloroethene and trans-1,2-dichloroethene exceeded the acceptance limit; therefore, the associated non-detect results were qualified as estimated (UJ).

Continuing Calibration:

Within Criteria	Exceedance/Notes
Υ	

Calibration Verification:

Within Criteria	Exceedance/Notes
Υ	

Method blanks:

١	Within	Exceedance/Notes
(Criteria	Exceedance/ Notes
	Υ	

Field blanks:

Within Criteria	Exceedance/Notes
NA	



Interference Check Sam	iples (ICS)) (ICP	metals	only):
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Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

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
Υ	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Υ	

Sample dilutions:

Within Criteria			Exceedance/Notes	
	1.54x: GRPCE-06-IA-	S)	1.78x: GRPCE-07-IA-	N)
V	1.64x: GRPCE-06-IA-	N)	1.81x: GRPCE-06-IA-	Common)
Y	1.65x: GRPCE-06-IA-	W)	1.83x: GRPCE-05-IA-	W)
	1.76x: GRPCE-06-IA-	W)-DP	1.84x: GRPCE-06-IA-	SFR)

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
Υ	

Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	Results between the method detection limit and the reporting limit with qualified as estimated (J) by the laboratory.

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

Other [specify].	
Within	Evenadores /Netes
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.



GRAND RAPIDS VI ER ANALYTICAL RESULTS SUMMARY EUROFINS-AIR TOXICS REPORT NO. 1611159

CLIENTSAMPID	COMPOUND NAME	RESULTS	DATAFLAGS	MDL REPLMT	UNITS VALRESULTS	VALFLAGS
GRPCE-06-IA-N)	Vinyl Chloride		ND	0.043 0.16	PPBV 0.16	U
GRPCE-06-IA-N)	trans-1,2-Dichloroethene		ND	0.038 0.16	PPBV 0.16	UJ
GRPCE-06-IA-N)	cis-1,2-Dichloroethene		ND	0.054 0.16	PPBV 0.16	UJ
GRPCE-06-IA-N)	Trichloroethene		ND	0.055 0.16	PPBV 0.16	U
GRPCE-06-IA-N)	Tetrachloroethene	0.11	J	0.026 0.16	PPBV 0.11	J
GRPCE-06-IA-N)	Vinyl Chloride		ND	0.11 0.42	UG/M3 0.42	U
GRPCE-06-IA-N)	trans-1,2-Dichloroethene		ND	0.15 0.65	UG/M3 0.65	UJ
GRPCE-06-IA-N)	cis-1,2-Dichloroethene		ND	0.21 0.65	UG/M3 0.65	UJ
GRPCE-06-IA-N)	Trichloroethene		ND	0.30 0.88	UG/M3 0.88	U
GRPCE-06-IA-N)	Tetrachloroethene	0.74	J	0.18 1.1	UG/M3 0.74	J
GRPCE-05-IA-W)	Vinyl Chloride		ND	0.048 0.18	PPBV 0.18	U
GRPCE-05-IA-W)	trans-1,2-Dichloroethene		ND	0.042 0.18	PPBV 0.18	UJ
GRPCE-05-IA-W)	cis-1,2-Dichloroethene		ND	0.060 0.18	PPBV 0.18	UJ
GRPCE-05-IA-W)	Trichloroethene		ND	0.062 0.18	PPBV 0.18	U
GRPCE-05-IA-W)	Tetrachloroethene	0.17	J	0.029 0.18	PPBV 0.17	J
GRPCE-05-IA-W)	Vinyl Chloride		ND	0.12 0.47	UG/M3 0.47	U
GRPCE-05-IA-W)	trans-1,2-Dichloroethene		ND	0.17 0.72	UG/M3 0.72	UJ
GRPCE-05-IA-W)	cis-1,2-Dichloroethene		ND	0.24 0.72	UG/M3 0.72	UJ
GRPCE-05-IA-W)	Trichloroethene		ND	0.33 0.98	UG/M3 0.98	U
GRPCE-05-IA-W)	Tetrachloroethene	1.2	J	0.20 1.2	UG/M3 1.2	J
GRPCE-06-IA- Common)	Vinyl Chloride		ND	0.047 0.18	PPBV 0.18	U
GRPCE-06-IA- Common)	trans-1,2-Dichloroethene		ND	0.042 0.18	PPBV 0.18	UJ
GRPCE-06-IA- Common)	cis-1,2-Dichloroethene		ND	0.059 0.18	PPBV 0.18	UJ
GRPCE-06-IA- Common)	Trichloroethene	0.20		0.061 0.18	PPBV 0.20	
GRPCE-06-IA- Common)	Tetrachloroethene	0.51		0.029 0.18	PPBV 0.51	
GRPCE-06-IA- Common)	Vinyl Chloride		ND	0.12 0.46	UG/M3 0.46	U
GRPCE-06-IA- Common)	trans-1,2-Dichloroethene		ND	0.17 0.72	UG/M3 0.72	UJ
GRPCE-06-IA- Common)	cis-1,2-Dichloroethene		ND	0.23 0.72	UG/M3 0.72	UJ
GRPCE-06-IA- Common)	Trichloroethene	1.0		0.33 0.97	UG/M3 1.0	
GRPCE-06-IA- Common)	Tetrachloroethene	3.4		0.20 1.2	UG/M3 3.4	
GRPCE-06-IA- SFR)	Vinyl Chloride		ND	0.048 0.18	PPBV 0.18	U
GRPCE-06-IA-SFR)	trans-1,2-Dichloroethene		ND	0.043 0.18	PPBV 0.18	UJ
GRPCE-06-IA-	cis-1,2-Dichloroethene		ND	0.060 0.18	PPBV 0.18	UJ

GRAND RAPIDS VI ER ANALYTICAL RESULTS SUMMARY EUROFINS-AIR TOXICS REPORT NO. 1611159

CLIENTSAMPID		COMPOUND NAME	RESULTS	DATAFLAGS	MDL	REPLMT	UNITS	VALRESULTS	VALFLAGS
GRPCE-06-IA-	SFR)	Trichloroethene		ND	0.062		PPBV	0.18	U
GRPCE-06-IA-	SFR)	Tetrachloroethene	0.12	J	0.029	0.18	PPBV	0.12	J
GRPCE-06-IA-	SFR)	Vinyl Chloride		ND	0.12	0.47	UG/M3	0.47	U
GRPCE-06-IA-	SFR)	trans-1,2-Dichloroethene		ND	0.17	0.73	UG/M3	0.73	UJ
GRPCE-06-IA-	SFR)	cis-1,2-Dichloroethene		ND	0.24	0.73	UG/M3	0.73	UJ
GRPCE-06-IA-	SFR)	Trichloroethene		ND	0.33	0.99	UG/M3	0.99	U
GRPCE-06-IA-	SFR)	Tetrachloroethene	0.80	J	0.20	1.2	UG/M3	0.80	J
GRPCE-07-IA-	N)	Vinyl Chloride		ND	0.047	0.18	PPBV	0.18	U
GRPCE-07-IA-	N)	trans-1,2-Dichloroethene		ND	0.041	0.18	PPBV	0.18	UJ
GRPCE-07-IA-	N)	cis-1,2-Dichloroethene		ND	0.058	0.18	PPBV	0.18	UJ
GRPCE-07-IA-	N)	Trichloroethene		ND	0.060	0.18	PPBV	0.18	U
GRPCE-07-IA-	N)	Tetrachloroethene	0.26		0.028	0.18	PPBV	0.26	
GRPCE-07-IA-	N)	Vinyl Chloride		ND	0.12	0.46	UG/M3	0.46	U
GRPCE-07-IA-	N)	trans-1,2-Dichloroethene		ND	0.16	0.70	UG/M3	0.70	UJ
GRPCE-07-IA-	N)	cis-1,2-Dichloroethene		ND	0.23	0.70	UG/M3	0.70	UJ
GRPCE-07-IA-	N)	Trichloroethene		ND	0.32	0.96	UG/M3	0.96	U
GRPCE-07-IA-	N)	Tetrachloroethene	1.7		0.19	1.2	UG/M3	1.7	
GRPCE-06-IA-	S)	Vinyl Chloride		ND	0.040	0.15	PPBV	0.15	U
GRPCE-06-IA-	S)	trans-1,2-Dichloroethene		ND	0.036	0.15	PPBV	0.15	UJ
GRPCE-06-IA-	S)	cis-1,2-Dichloroethene		ND	0.050	0.15	PPBV	0.15	UJ
GRPCE-06-IA-	S)	Trichloroethene		ND	0.052	0.15	PPBV	0.15	U
GRPCE-06-IA-	S)	Tetrachloroethene	0.17		0.024	0.15	PPBV	0.17	
GRPCE-06-IA-	S)	Vinyl Chloride		ND	0.10	0.39	UG/M3	0.39	U
GRPCE-06-IA-	S)	trans-1,2-Dichloroethene		ND	0.14	0.61	UG/M3	0.61	UJ
GRPCE-06-IA-	S)	cis-1,2-Dichloroethene		ND	0.20	0.61	UG/M3	0.61	UJ
GRPCE-06-IA-	S)	Trichloroethene		ND	0.28	0.83	UG/M3	0.83	U
GRPCE-06-IA-	S)	Tetrachloroethene	1.1		0.17	1.0	UG/M3	1.1	
GRPCE-06-IA-	-W)	Vinyl Chloride		ND	0.043	0.16	PPBV	0.16	U
GRPCE-06-IA-	-W)	trans-1,2-Dichloroethene		ND	0.038	0.16	PPBV	0.16	UJ
GRPCE-06-IA-	-W)	cis-1,2-Dichloroethene		ND	0.054	0.16	PPBV	0.16	UJ
GRPCE-06-IA-	-W)	Trichloroethene		ND	0.055	0.16	PPBV	0.16	U
GRPCE-06-IA-	-W)	Tetrachloroethene	0.21		0.026	0.16	PPBV	0.21	
GRPCE-06-IA-	-W)	Vinyl Chloride		ND	0.11	0.42	UG/M3	0.42	U

GRAND RAPIDS VI ER ANALYTICAL RESULTS SUMMARY EUROFINS-AIR TOXICS REPORT NO. 1611159

CLIENTSAMPID		COMPOUND NAME	RESULTS	DATAFLAGS	MDL	REPLMT	UNITS	VALRESULTS	VALFLAGS
GRPCE-06-IA-	-W)	trans-1,2-Dichloroethene		ND	0.15	0.65	UG/M3	0.65	UJ
GRPCE-06-IA-	-W)	cis-1,2-Dichloroethene		ND	0.21	0.65	UG/M3	0.65	UJ
GRPCE-06-IA-	-W)	Trichloroethene		ND	0.30	0.89	UG/M3	0.89	U
GRPCE-06-IA-	-W)	Tetrachloroethene	1.4		0.18	1.1	UG/M3	1.4	
GRPCE-06-IA-	W)-DP	Vinyl Chloride		ND	0.046	0.18	PPBV	0.18	U
GRPCE-06-IA-	W)-DP	trans-1,2-Dichloroethene		ND	0.041	0.18	PPBV	0.18	UJ
GRPCE-06-IA-	W)-DP	cis-1,2-Dichloroethene		ND	0.057	0.18	PPBV	0.18	UJ
GRPCE-06-IA-	W)-DP	Trichloroethene		ND	0.059	0.18	PPBV	0.18	U
GRPCE-06-IA-	W)-DP	Tetrachloroethene	0.18		0.028	0.18	PPBV	0.18	
GRPCE-06-IA-	W)-DP	Vinyl Chloride		ND	0.12	0.45	UG/M3	0.45	U
GRPCE-06-IA-	W)-DP	trans-1,2-Dichloroethene		ND	0.16	0.70	UG/M3	0.70	UJ
GRPCE-06-IA-	W)-DP	cis-1,2-Dichloroethene		ND	0.23	0.70	UG/M3	0.70	UJ
GRPCE-06-IA-	W)-DP	Trichloroethene		ND	0.32	0.94	UG/M3	0.94	U
GRPCE-06-IA-	W)-DP	Tetrachloroethene	1.2		0.19	1.2	UG/M3	1.2	



November 29, 2016

Betsy Nightingale On-Scene Coordinator U.S. Environmental Protection Agency Region 5 9311 Groh Road Grosse Ile, MI 48138-1697

Subject: Data Validation Reports

Grand Rapids VI ER

EPA Contract No. EP-S5-13-01

Technical Direction Document No. S05-0001-1605-010

Document Tracking No. 1311

Dear Ms. Nightingale:

Tetra Tech Inc. (Tetra Tech) is submitting these Data Validation Reports for 19 air samples (including four field duplicates) collected at the Grand Rapids VI ER site. The samples were collected on November 8 and 15, 2016 and were analyzed for volatile organic compounds by ALS Environmental Laboratories and Bureau Veritas Laboratories. Tetra Tech received the final data on November 23, 2016.

Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines* (NFG) for Superfund Organic Methods Data Review (August 2014).

No rejection of results was required for these data sets. The data is usable as qualified based on the findings of this validation effort.

If you have any questions regarding these Data Validation Reports, please call me at (662) 681-5727.

Sincerely,

Jessica A. Vickers START Chemist

Enclosure

cc: Kevin Scott, Tetra Tech Program Manager

Michael Browning, Tetra Tech Project Manager

TDD File

Jesaca a Vickers

ATTACHMENT 1

DATA VALIDATION REPORTS ALS ENVIRONMENTAL SDG P1605258 BUREAU VERITAS SDG 16110911

Site Name	Grand Rapids VI ER		TDD No.	\$05-0001-1605-010	
Document Tracking No.	1311A		TDD NO.	303-0001-1603-010	
Data Reviewer (signature and date)	Jeoaca A. Vickers November 29, 2016		Technical Reviewer	1 2 2	
Laboratory Report No.	P1605258		Laboratory	ALS Laboratories/Simi Valley, CA	
Analyses	Volatile organic compounds (\	VOCs) by EPA N	1ethod TO-15		
Samples and Matrix	Twelve air samples (including	four field dupli	cates)		
	GRPCE-06-IA-	Main)/GRPCE-0)6-IA-	Main)-DP,	
Field Duplicate Pairs	GRPCE-06-IA-	(Main)/GRPCE-06-IA-		(Main)-DP,	
	GRPCE-06-IA- (Main)/GRPCE-0		6-IA- (N	ain)-DP, and	
	GRPCE-06-IA-	(Basement)/GRPCE-06-IA-		(Basement)-DP	
Field Blanks	None				

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	



Samp	le p	reserv	/ation,	receipt	t, and	holding	times:

Sample preservation, receipt, and noice	ing times:
Within Criteria	Exceedance/Notes
Υ	
Instrument Performance Checks:	
Within	
Criteria	Exceedance/Notes
Υ	
Initial Calibration:	
Within	Evenedones /Notes
Criteria	Exceedance/Notes
Υ	
Continuing Calibration:	
Within	Exceedance/Notes
Criteria	Exact during fronts
Υ	
Calibration Verification:	
Within	- 1 (1)
Criteria	Exceedance/Notes
Υ	
Method blanks:	
Within	Fuse adence /Notes
Criteria	Exceedance/Notes



	EIA REGION S START CONTRACT
Field blank	s:
Within Criteria	Exceedance/Notes
NA	
Interferenc	te Check Samples (ICS) (ICP metals only):
Within Criteria	Exceedance/Notes
NA	
	nitoring compounds (surrogates and labeled compounds):
Within Criteria	Exceedance/Notes
Y	
'	
MS/MSD:	
Within Criteria	Exceedance/Notes
NA	
Post digest	ion spikes:
Within	Exceedance/Notes
Criteria	
NA	
Serial diluti	ions:
Within Criteria	Exceedance/Notes



NA

Laboratory duplicates:

Within Criteria	Exceedance/Notes
Υ	

Field duplicates:

Within Criteria	Exceedance/Notes
Υ	

LCSs/LCSDs:

Vithin riteria	Exceedance/Notes
Υ	

Sample dilutions:

Within Criteria	Fxceedance/Notes					
	1.50x: VOCs for GRPCE-06-IA-	(Basement) and GRPCE-06-IA-	(Main)			
	1.56x: VOCs for GRPCE-06-IA-	(Main)-DP and GRPCE-06-IA-	(Main)			
	1.57x: VOCs for GRPCE-06-IA-	(Main)				
V	1.60x: VOCs for GRPCE-06-IA-	(Basement)				
Y	1.62x: VOCs for GRPCE-06-IA-	(Basement) and GRPCE-06-IA-	(Main)			
	1.64x: VOCs for GRPCE-06-IA-	(Main)-DP and GRPCE-06-IA-	(Basement)			
	1.70x: VOCs for GRPCE-06-IA-	(Basement)-DP				
	16.4x: VOCs for GRPCE-06-IA-	(Main)-DP				



Re-extraction	and reanal	ysis:
---------------	------------	-------

Within Criteria	Exceedance/Notes
NA	

Second column confirmation (GC and HPLC analyses only):

Within Criteria	Exceedance/Notes
NA	

Internal Standards:

Within Criteria	Exceedance/Notes
Υ	

Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	All results were either non-detect or above RL.

Tentatively identified compounds:

Within	Exceedance/Notes
Criteria	Exceedance/ Notes
NA	



System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

- tille fobe	····11·
Within	Exceedance/Notes
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.



Samp_No		Analyte	Result Lab_Qualifier	Result_Units	MDL RL	Val. Result Val_Qualifier
GRPCE-06-IA-	(Basement)	cis-1,2-Dichloroethene	0.038 U	ppbV	0.035 0.038	0.038 U
GRPCE-06-IA-	(Basement)	Tetrachloroethene	0.022 U	ppbV	0.016 0.022	0.022 U
GRPCE-06-IA-	(Basement)	trans-1,2-Dichloroethene	0.038 U	ppbV	0.034 0.038	0.038 U
GRPCE-06-IA-	(Basement)	Trichloroethene (TCE)	0.028 U	ppbV	0.025 0.028	0.028 U
GRPCE-06-IA-	(Basement)	Vinyl Chloride	0.059 U	ppbV	0.056 0.059	0.059 U
GRPCE-06-IA-	(Basement)	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14 0.15	0.15 U
GRPCE-06-IA-	(Basement)	Tetrachloroethene	0.15 U	ug/m3	0.11 0.15	0.15 U
GRPCE-06-IA-	(Basement)	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.14 0.15	0.15 U
GRPCE-06-IA-	(Basement)	Trichloroethene (TCE)	0.15 U	ug/m3	0.13 0.15	0.15 U
GRPCE-06-IA-	(Basement)	Vinyl Chloride	0.15 U	ug/m3	0.14 0.15	0.15 U
GRPCE-06-IA-	(Main)	cis-1,2-Dichloroethene	0.038 U	ppbV	0.035 0.038	0.038 U
GRPCE-06-IA-	(Main)	Tetrachloroethene	0.22	ppbV	0.016 0.022	0.22
GRPCE-06-IA-	(Main)	trans-1,2-Dichloroethene	0.038 U	ppbV	0.034 0.038	0.038 U
GRPCE-06-IA-	(Main)	Trichloroethene (TCE)	0.028 U	ppbV	0.025 0.028	0.028 U
GRPCE-06-IA-	(Main)	Vinyl Chloride	0.059 U	ppbV	0.056 0.059	0.059 U
GRPCE-06-IA-	(Main)	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14 0.15	0.15 U
GRPCE-06-IA-	(Main)	Tetrachloroethene	1.5	ug/m3	0.11 0.15	1.5
GRPCE-06-IA-	(Main)	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.14 0.15	0.15 U
GRPCE-06-IA-	(Main)	Trichloroethene (TCE)	0.15 U	ug/m3	0.13 0.15	0.15 U
GRPCE-06-IA-	(Main)	Vinyl Chloride	0.15 U	ug/m3	0.14 0.15	0.15 U
GRPCE-06-IA-	(Main)-DP	cis-1,2-Dichloroethene	0.039 U	ppbV	0.036 0.039	0.039 U
GRPCE-06-IA-	(Main)-DP	Tetrachloroethene	0.23	ppbV	0.017 0.023	0.23
GRPCE-06-IA-	(Main)-DP	trans-1,2-Dichloroethene	0.039 U	ppbV	0.036 0.039	0.039 U
GRPCE-06-IA-	(Main)-DP	Trichloroethene (TCE)	0.029 U	ppbV	0.026 0.029	0.029 U
GRPCE-06-IA-	(Main)-DP	Vinyl Chloride	0.061 U	ppbV	0.058 0.061	0.061 U
GRPCE-06-IA-	(Main)-DP	cis-1,2-Dichloroethene	0.16 U	ug/m3	0.14 0.16	0.16 U
GRPCE-06-IA-	(Main)-DP	Tetrachloroethene	1.6	ug/m3	0.11 0.16	1.6
GRPCE-06-IA-	(Main)-DP	trans-1,2-Dichloroethene	0.16 U	ug/m3	0.14 0.16	0.16 U
GRPCE-06-IA-	(Main)-DP	Trichloroethene (TCE)	0.16 U	ug/m3	0.14 0.16	0.16 U
GRPCE-06-IA-	(Main)-DP	Vinyl Chloride	0.16 U	ug/m3	0.15 0.16	0.16 U
GRPCE-06-IA-	(Basement)	cis-1,2-Dichloroethene	0.041 U	ppbV	0.038 0.041	0.041 U
GRPCE-06-IA-	(Basement)	Tetrachloroethene	0.29	ppbV	0.017 0.024	0.29
GRPCE-06-IA-	(Basement)	trans-1,2-Dichloroethene	0.041 U	ppbV	0.037 0.041	0.041 U
GRPCE-06-IA-	(Basement)	Trichloroethene (TCE)	0.03 U	ppbV	0.027 0.03	0.03 U

Samp_No		Analyte	Result Lab_Qualifier	Result_Units	MDL	RL	Val. Result Val_Qualifier
GRPCE-06-IA-	(Basement)	Vinyl Chloride	0.063 U	ppbV	0.06	0.063	0.063 U
GRPCE-06-IA-	(Basement)	cis-1,2-Dichloroethene	0.16 U	ug/m3	0.15	0.16	0.16 U
GRPCE-06-IA-	(Basement)	Tetrachloroethene	2	ug/m3	0.12	0.16	2
GRPCE-06-IA-	(Basement)	trans-1,2-Dichloroethene	0.16 U	ug/m3	0.15	0.16	0.16 U
GRPCE-06-IA-	(Basement)	Trichloroethene (TCE)	0.16 U	ug/m3	0.14	0.16	0.16 U
GRPCE-06-IA-	(Basement)	Vinyl Chloride	0.16 U	ug/m3	0.15	0.16	0.16 U
GRPCE-06-IA-	(Main)	cis-1,2-Dichloroethene	0.039 U	ppbV	0.036	0.039	0.039 U
GRPCE-06-IA-	(Main)	Tetrachloroethene	0.26	ppbV	0.017	0.023	0.26
GRPCE-06-IA-	(Main)	trans-1,2-Dichloroethene	0.039 U	ppbV	0.036	0.039	0.039 U
GRPCE-06-IA-	(Main)	Trichloroethene (TCE)	0.029 U	ppbV	0.026	0.029	0.029 U
GRPCE-06-IA-	(Main)	Vinyl Chloride	0.061 U	ppbV	0.058	0.061	0.061 U
GRPCE-06-IA-	(Main)	cis-1,2-Dichloroethene	0.16 U	ug/m3	0.14	0.16	0.16 U
GRPCE-06-IA-	(Main)	Tetrachloroethene	1.8	ug/m3	0.11	0.16	1.8
GRPCE-06-IA-	(Main)	trans-1,2-Dichloroethene	0.16 U	ug/m3	0.14	0.16	0.16 U
GRPCE-06-IA-	(Main)	Trichloroethene (TCE)	0.16 U	ug/m3	0.14	0.16	0.16 U
GRPCE-06-IA-	(Main)	Vinyl Chloride	0.16 U	ug/m3	0.15	0.16	0.16 U
GRPCE-06-IA-	(Main)-DP	cis-1,2-Dichloroethene	0.041 U	ppbV	0.038	0.041	0.041 U
GRPCE-06-IA-	(Main)-DP	Tetrachloroethene	0.26	ppbV	0.017	0.024	0.26
GRPCE-06-IA-	(Main)-DP	trans-1,2-Dichloroethene	0.041 U	ppbV	0.038	0.041	0.041 U
GRPCE-06-IA-	(Main)-DP	Trichloroethene (TCE)	0.031 U	ppbV	0.027	0.031	0.031 U
GRPCE-06-IA-	(Main)-DP	Vinyl Chloride	0.064 U	ppbV	0.061	0.064	0.064 U
GRPCE-06-IA-	(Main)-DP	cis-1,2-Dichloroethene	0.16 U	ug/m3	0.15	0.16	0.16 U
GRPCE-06-IA-	(Main)-DP	Tetrachloroethene	1.8	ug/m3	0.12	0.16	1.8
GRPCE-06-IA-	(Main)-DP	trans-1,2-Dichloroethene	0.16 U	ug/m3	0.15	0.16	0.16 U
GRPCE-06-IA-	(Main)-DP	Trichloroethene (TCE)	0.16 U	ug/m3	0.15	0.16	0.16 U
GRPCE-06-IA-	(Main)-DP	Vinyl Chloride	0.16 U	ug/m3	0.16	0.16	0.16 U
GRPCE-06-IA-	(Basement)	cis-1,2-Dichloroethene	0.041 U	ppbV	0.038	0.041	0.041 U
GRPCE-06-IA-	(Basement)	Tetrachloroethene	0.15	ppbV	0.017	0.024	0.15
GRPCE-06-IA-	(Basement)	trans-1,2-Dichloroethene	0.041 U	ppbV	0.038	0.041	0.041 U
GRPCE-06-IA-	(Basement)	Trichloroethene (TCE)	0.031 U	ppbV	0.027	0.031	0.031 U
GRPCE-06-IA-	(Basement)	Vinyl Chloride	0.064 U	ppbV	0.061	0.064	0.064 U
GRPCE-06-IA-	(Basement)	cis-1,2-Dichloroethene	0.16 U	ug/m3	0.15	0.16	0.16 U
GRPCE-06-IA-	(Basement)	Tetrachloroethene	1	ug/m3	0.12	0.16	1
GRPCE-06-IA-	(Basement)	trans-1,2-Dichloroethene	0.16 U	ug/m3	0.15	0.16	0.16 U

Samp_No		Analyte	Result Lab_Qualifier	Result_Units	MDL	RL	Val. Result Val_Qualifier
GRPCE-06-IA-	(Basement)	Trichloroethene (TCE)	0.16 U	ug/m3	0.15	0.16	0.16 U
GRPCE-06-IA-	(Basement)	Vinyl Chloride	0.16 U	ug/m3	0.16	0.16	0.16 U
GRPCE-06-IA-	(Main)	cis-1,2-Dichloroethene	0.041 U	ppbV	0.038	0.041	0.041 U
GRPCE-06-IA-	(Main)	Tetrachloroethene	0.1	ppbV	0.017	0.024	0.1
GRPCE-06-IA-	(Main)	trans-1,2-Dichloroethene	0.041 U	ppbV	0.037	0.041	0.041 U
GRPCE-06-IA-	(Main)	Trichloroethene (TCE)	0.03 U	ppbV	0.027	0.03	0.03 U
GRPCE-06-IA-	(Main)	Vinyl Chloride	0.063 U	ppbV	0.06	0.063	0.063 U
GRPCE-06-IA-	(Main)	cis-1,2-Dichloroethene	0.16 U	ug/m3	0.15	0.16	0.16 U
GRPCE-06-IA-	(Main)	Tetrachloroethene	0.69	ug/m3	0.12	0.16	0.69
GRPCE-06-IA-	(Main)	trans-1,2-Dichloroethene	0.16 U	ug/m3	0.15	0.16	0.16 U
GRPCE-06-IA-	(Main)	Trichloroethene (TCE)	0.16 U	ug/m3	0.14	0.16	0.16 U
GRPCE-06-IA-	(Main)	Vinyl Chloride	0.16 U	ug/m3	0.15	0.16	0.16 U
GRPCE-06-IA-	(Main)-DP	cis-1,2-Dichloroethene	0.083 U	ppbV	0.076	0.083	0.083 U
GRPCE-06-IA-	(Main)-DP	Tetrachloroethene	0.11	ppbV	0.035	0.048	0.11
GRPCE-06-IA-	(Main)-DP	trans-1,2-Dichloroethene	0.083 U	ppbV	0.075	0.083	0.083 U
GRPCE-06-IA-	(Main)-DP	Trichloroethene (TCE)	0.061 U	ppbV	0.054	0.061	0.061 U
GRPCE-06-IA-	(Main)-DP	Vinyl Chloride	0.13 U	ppbV	0.12	0.13	0.13 U
GRPCE-06-IA-	(Main)-DP	cis-1,2-Dichloroethene	0.33 U	ug/m3	0.3	0.33	0.33 U
GRPCE-06-IA-	(Main)-DP	Tetrachloroethene	0.74	ug/m3	0.24	0.33	0.74
GRPCE-06-IA-	(Main)-DP	trans-1,2-Dichloroethene	0.33 U	ug/m3	0.3	0.33	0.33 U
GRPCE-06-IA-	(Main)-DP	Trichloroethene (TCE)	0.33 U	ug/m3	0.29	0.33	0.33 U
GRPCE-06-IA-	(Main)-DP	Vinyl Chloride	0.33 U	ug/m3	0.31	0.33	0.33 U
GRPCE-06-IA-	(Basement)	cis-1,2-Dichloroethene	0.04 U	ppbV	0.037	0.04	0.04 U
GRPCE-06-IA-	(Basement)	Tetrachloroethene	0.22	ppbV	0.017	0.024	0.22
GRPCE-06-IA-	(Basement)	trans-1,2-Dichloroethene	0.04 U	ppbV	0.037	0.04	0.04 U
GRPCE-06-IA-	(Basement)	Trichloroethene (TCE)	0.03 U	ppbV	0.027	0.03	0.03 U
GRPCE-06-IA-	(Basement)	Vinyl Chloride	0.063 U	ppbV	0.059	0.063	0.063 U
GRPCE-06-IA-	(Basement)	cis-1,2-Dichloroethene	0.16 U	ug/m3	0.15	0.16	0.16 U
GRPCE-06-IA-	(Basement)	Tetrachloroethene	1.5	ug/m3	0.12	0.16	1.5
GRPCE-06-IA-	(Basement)	trans-1,2-Dichloroethene	0.16 U	ug/m3	0.15	0.16	0.16 U
GRPCE-06-IA-	(Basement)	Trichloroethene (TCE)	0.16 U	ug/m3	0.14	0.16	0.16 U
GRPCE-06-IA-	(Basement)	Vinyl Chloride	0.16 U	ug/m3	0.15	0.16	0.16 U
GRPCE-06-IA-	(Basement)-DP	cis-1,2-Dichloroethene	0.043 U	ppbV	0.039	0.043	0.043 U
GRPCE-06-IA-	(Basement)-DP	Tetrachloroethene	0.22	ppbV	0.018	0.025	0.22

Samp_No		Analyte	Result Lab_Qualifier	Result_Units	MDL	RL	Val. Result Val_Qualifier
GRPCE-06-IA-	(Basement)-DP	trans-1,2-Dichloroethene	0.043 U	ppbV	0.039	0.043	0.043 U
GRPCE-06-IA-	(Basement)-DP	Trichloroethene (TCE)	0.032 U	ppbV	0.028	0.032	0.032 U
GRPCE-06-IA-	(Basement)-DP	Vinyl Chloride	0.067 U	ppbV	0.063	0.067	0.067 U
GRPCE-06-IA-	(Basement)-DP	cis-1,2-Dichloroethene	0.17 U	ug/m3	0.16	0.17	0.17 U
GRPCE-06-IA-	(Basement)-DP	Tetrachloroethene	1.5	ug/m3	0.12	0.17	1.5
GRPCE-06-IA-	(Basement)-DP	trans-1,2-Dichloroethene	0.17 U	ug/m3	0.15	0.17	0.17 U
GRPCE-06-IA-	(Basement)-DP	Trichloroethene (TCE)	0.17 U	ug/m3	0.15	0.17	0.17 U
GRPCE-06-IA-	(Basement)-DP	Vinyl Chloride	0.17 U	ug/m3	0.16	0.17	0.17 U
GRPCE-06-IA-	(Main)	cis-1,2-Dichloroethene	0.04 U	ppbV	0.036	0.04	0.04 U
GRPCE-06-IA-	(Main)	Tetrachloroethene	0.19	ppbV	0.017	0.023	0.19
GRPCE-06-IA-	(Main)	trans-1,2-Dichloroethene	0.04 U	ppbV	0.036	0.04	0.04 U
GRPCE-06-IA-	(Main)	Trichloroethene (TCE)	0.029 U	ppbV	0.026	0.029	0.029 U
GRPCE-06-IA-	(Main)	Vinyl Chloride	0.061 U	ppbV	0.058	0.061	0.061 U
GRPCE-06-IA-	(Main)	cis-1,2-Dichloroethene	0.16 U	ug/m3	0.14	0.16	0.16 U
GRPCE-06-IA-	(Main)	Tetrachloroethene	1.3	ug/m3	0.11	0.16	1.3
GRPCE-06-IA-	(Main)	trans-1,2-Dichloroethene	0.16 U	ug/m3	0.14	0.16	0.16 U
GRPCE-06-IA-	(Main)	Trichloroethene (TCE)	0.16 U	ug/m3	0.14	0.16	0.16 U
GRPCE-06-IA-	(Main)	Vinyl Chloride	0.16 U	ug/m3	0.15	0.16	0.16 U

Site Name	Grand Rapids VI ER	TDD No.	\$05-0001-1605-010
Document Tracking No.	1311B	וטט ואט.	303-0001-1603-010
Data Reviewer (signature and date)	Jeoaca A. Vickers November 29, 2016	Technical Reviewer (signature and date)	Hang N. Ellis III 29 November 2016
Laboratory Report No.	16110911	Laboratory	Bureau Veritas/Novi, MI
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15	
Samples and Matrix	Seven air samples		
Field Duplicate Pairs	None		
Field Blanks	None		

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection of results was required for this data set. The data is usable as qualified based on the findings of this validation effort.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrument Performance Checks:

instrument Performance Checks:	
Within Criteria	Exceedance/Notes
Υ	
initial California	
nitial Calibration:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
Υ	
Ť	
Continuing Calibration: Within Criteria	Exceedance/Notes
Continuing Calibration: Within	Exceedance/Notes
Continuing Calibration: Within Criteria	Exceedance/Notes
Continuing Calibration: Within Criteria Y Calibration Verification: Within	
Continuing Calibration: Within Criteria Y Calibration Verification:	Exceedance/Notes Exceedance/Notes

Method blanks:

Within Criteria	Exceedance/Notes
N	Trichloroethene was detected in the method blank below the associated reporting limit (RL). Therefore, the trichloroethene results below the RLs for samples GRPCE-38-IA- BASEMENT), GRPCE-38-IA- MAIN), GRPCE-38-IA- Were raised to the RL and qualified as non-detect (U). Additionally, the trichloroethene result for GRPCE-39-IA- 2) was less than ten times the associated blank value and was therefore qualified as estimated with a possible high bias (J+). No further qualifications were required because the associated results were greater than ten times the associated blank value.



	EIA REGION S START CONTRACT
Field blank	s:
Within Criteria	Exceedance/Notes
NA	
Interferenc	te Check Samples (ICS) (ICP metals only):
Within Criteria	Exceedance/Notes
NA	
	nitoring compounds (surrogates and labeled compounds):
Within Criteria	Exceedance/Notes
Y	
'	
MS/MSD:	
Within Criteria	Exceedance/Notes
NA	
Post digest	ion spikes:
Within	Exceedance/Notes
Criteria	
NA	
Serial diluti	ions:
Within Criteria	Exceedance/Notes



NA

	EPA REGION 5 START CONTRACT
Laboratory duplicates:	
Within	Exceedance/Notes
Criteria	Exceedance, Notes
NA	
Field duplicates:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
NA	
LCSs/LCSDs:	
Within	Evenedower /Notes
Criteria	Exceedance/Notes
Υ	
Sample dilutions:	
Within	Exceedance/Notes
Criteria	Exceedance/ Notes
NA	
Re-extraction and reanalysis:	
Within	E In (No. 1)
Criteria	Exceedance/Notes
NA	
Second column confirmation (GC and H	PLC analyses only):
Within	
Criteria	Exceedance/Notes



NA

Internal Standards:

Within Criteria	Exceedance/Notes
Υ	

Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	The laboratory qualified results between the RL and method detection limit as estimated (J).

Tentatively identified compounds:

	,
Within	Even dance / Notes
Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within	Exceedance/Notes
Criteria	
Υ	

Other [specify]:

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:

1	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.
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.





Vinyl Chloride

Date: 23-Nov-16

Client:		TETRA TECH								
Project:		GRAND RAPIDS EMER	GENCY RESPONSE				Work Ord	ler No:	16110911	
Sample Iden	tificati	on GRPCE-38-IA	BASEMENT)				Date Sa	mpled:	11/15/2016	6
Lab Number	r:	006A					Date Re	ceived:	11/15/2010	6
Sample Type	e:	Air, Can					Analysi	s Date:	11/16/201	6
Test Method	1:	EPA Method TO-15A					A	nalyst:	DRS	
Initial Press	ure:	-1.29 psig								
Final Pressu	re:	-1.29 psig								
Canister ID:		13987								
CAS#		Analyte	e	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF Qual
156-59-2	cis-1	2-Dichloroethene		ND	0.024	C0 16	u) -NE	0 0061	(0 044)	1
127-18-4		chloroethene		0.95	0.036		1	0.0053		1
156-60-5		-1,2-Dichloroethene		3.1	0.019	-		0.0049		1
79-01-6	Trich	loroethene		-0.16	0.021	0.21	U 0.030	0.0039	0.044	1



0.10L) ND 0 0088

0.022

ND-

75-01-4

-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S, Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Date: 23-Nov-16

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

MAIN)

Work Order No: 16110911

Lab Number:

Sample Identification GRPCE-38-IA-

Date Sampled: 11/15/2016

005A

Date Received: 11/15/2016

Sample Type:

Air, Can

Analysis Date: 11/16/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-2.37 psig

Final Pressure: Canister ID:

-2.37 psig 14027

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 (0.164) 10 0 0061 (0.044) 1
127-18-4	Tetrachloroethene	0.81 0.036 0.27 0.12 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	5.4 0.019 0.16 1.4 0.0049 0.04 1
79-01-6	Trichloroethene	0.16 0.021 0.21 0.030 0.0039 0.044 1 X
75-01-4	Vinyl Chloride	ND 0.022 (0.104) ND 0.088 (0.044)



General Notes and Qualifiers:

-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Date: 23-Nov-16

TETRA TECH	
GRAND RAPIDS EMERGENCY RESPONSE	Work Order No: 16110911
fication GRPCE-38-IA-	Date Sampled: 11/15/2016
004A	Date Received: 11/15/2016
Air, Can	Analysis Date: 11/16/2016
EPA Method TO-15A	Analyst: DRS
e: -1.42 psig	
-1.42 psig	
14618	
Analyte	Results MDL RL Results MDL RL (ug/m²) (ug/m²) (ug/m²) (ppbV) (ppbV) (ppbV) DF Qual
cis-1,2-Dichloroethene	0.024 (0.164) ND 0.0061 (0.044)1
Tetrachloroethene	0.88 0.036 0.27 0.13 0.0053 0.04 1
trans-1,2-Dichloroethene	2.7 0.019 0.16 0.67 0.0049 0.04 1
Trichloroethene	0.021 0.21 0.039 0.044 1 0.002 0.044 1 0.0039
	GRAND RAPIDS EMERGENCY RESPONSE Gration GRPCE-38-IA- 004A Air, Can EPA Method TO-15A e: -1.42 psig : -1.42 psig 14618 Analyte cis-1,2-Dichloroethene Tetrachloroethene trans-1,2-Dichloroethene



-, Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL, Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Date: 23-Nov-16

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16110911

Sample Identification GRPCE-38-IA-1 Lab Number:

003A

Date Sampled: 11/15/2016

Air, Can

Date Received: 11/15/2016

Sample Type: Test Method:

Analysis Date: 11/16/2016 Analyst: DRS

EPA Method TO-15A

Initial Pressure:

-1.37 psig

Final Pressure:

-1.37 psig

Canister ID:	14624	
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 (0.164) ND 0.0061 (0.044)
127-18-4	Tetrachloroethene	0.75 0.036 0.27 0.11 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	1.6 0.019 0.16 0.41 0.0049 0.04 1
79-01-6	Trichloroethene	0.54 0.021 0.21 0.10 0.0039 0.04 1
75-01-4	Vinyl Chloride	ND 0.022 0.10 ND 0.0088 0.04 L1 1



S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T: Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Sample Identification GRPCE-39-IA-

Date: 23-Nov-16

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16110911

Lab Number:

001A

Date Sampled: 11/15/2016

Date Received: 11/15/2016

Sample Type:

Air, Can

Analysis Date: 11/16/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-1.9 psig

Final Pressure:

-1.9 psig

Canister ID:

14338

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m²) (ug/m²) (ug/m²) (ppbV) (ppbV) (ppbV)	DF Qual
156-59-2	cis-1,2-Dichloroethene	0.040 3 0 024 0.16 0.010 3 00061 0.04	1 8
127-18-4	Tetrachloroethene	0.95 0.036 0.27 0.14 0.0053 0.04	1
156-60-5	trans-1,2-Dichlorocthene	0.28 0.019 0.16 0.070 0.0049 0.04	1
79-01-6	Trichlorocthene	0.16 0.021 0.2144,030 0.0039 0.044	1 1
75-01-4	Vinyl Chloride	NO 0.022 0.104 ND 0.0088 0.044	1



-: Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Date: 23-Nov-16

Date Sampled: 11/15/2016

Date Received: 11/15/2016 Analysis Date: 11/16/2016

Analyst: DRS

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16110911

Sample Identification GRPCE-39-IA-

Lab Number: 002A

Sample Type: Air, Can

Test Method: EPA Method TO-15A

Initial Pressure: -2.24 psig Final Pressure: -2.24 psig Canister ID: 14010

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m²) (ug/m²) (ppbV) (ppbV) (ppbV) DF Qu
156-59-2	cis-1,2-Dichloroethene	ND 0.024 (0.16 U) NO 0.0061 (0.04 U)
127-18-4	Tetrachloroethene	1.2 0.036 0.27 0.18 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	1.1 0.019 0.16 0.29 0.049 0.04 1
79-01-6	Trichloroethene	0.21 3+ 0.021 0.21 0.040 3+00039 0.04 1
75-01-4	Vinyl Chloride	ND 0.022 (0.10 U) ND 0.0088 (0.04L1) I



-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



Results

(ug/m³)

0.75

0.054

0.040 3

ND.

0.021

0.022

0.214-0.010

0.1000

ANALYTICAL RESULTS

Date: 23-Nov-16

Project:	GRAND RAPIDS EMERGENCY RESPONSE	
Sample Identi	ification GRPCE-42-OA	

Analyte

007A Lab Number:

Sample Type: Air, Can

Client:

Test Method: EPA Method TO-15A

cis-1,2-Dichloroethene

trans-1.2-Dichloroethene

Tetrachlorocthene

Trichloroethene

Vinyl Chloride

TETRA TECH

Initial Pressure: -1.24 psig Final Pressure: -1.24 psig 14019 Canister ID:

CAS#

156-59-2 127-18-4

156-60-5

79-01-6

75-01-4

		Work Ord	ler No:	1611091	1	
		Date Sa	mpled:	11/15/20	16	
		Date Re	ceived:	11/15/20	16	
		Analysi	s Date:	11/16/20	16	
		A	nalyst:	DRS		
MDL (ug/m²)	RL (ug/m³)	Results (ppbV)		RL (ppbV)	DF	Qual
1,5,5,00	(ug/m³)	(ppbV)	(ppbV)			Qual



0.0039

₩B 0 0088

0.04

0.04

-: Information not available or not applicable.

ND: Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)



December 19, 2016

Betsy Nightingale On-Scene Coordinator U.S. Environmental Protection Agency Region 5 9311 Groh Road Grosse Ile, MI 48138-1697

Subject: Data Validation Reports

Grand Rapids VI ER

EPA Contract No. EP-S5-13-01

Technical Direction Document No. S05-0001-1605-010

Document Tracking No. 1376

Dear Ms. Nightingale:

Tetra Tech Inc. (Tetra Tech) is submitting these Data Validation Reports for 39 air samples (including four field duplicates) collected at the Grand Rapids VI ER site. The samples were collected on November 22, 2016 and December 1, 4, 8, and 13, 2016 and were analyzed for volatile organic compounds by Bureau Veritas Laboratories. Tetra Tech received the final data on December 16, 2016.

Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines* (NFG) for Superfund Organic Methods Data Review (September 2016).

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

If you have any questions regarding these Data Validation Reports, please call me at (662) 681-5727.

Sincerely,

Jessica A. Vickers START Chemist

Enclosure

cc: Kevin Scott, Tetra Tech Program Manager

Michael Browning, Tetra Tech Project Manager

TDD File

www.tetratech.com

ATTACHMENT 1

DATA VALIDATION REPORTS
BUREAU VERITAS SDGS 16111403, 16120051, 16120222, 16120525,
AND 16120814

Site Name	Grand Rapids VI ER	TDD No.	S05-0001-1605-010	
Document Tracking No.	1376A	TDD NO.	303-0001-1603-010	
Data Reviewer (signature and date)	Jeoaca A. Vickers December 16, 2016	Technical Reviewer (signature and date)	Hang N. Ellis III 19 December 2016	
Laboratory Report No.	16111403	Laboratory	Bureau Veritas/Novi, MI	
Analyses	Volatile organic compounds (VOCs) by EPA Method TO-15			
Samples and Matrix	Seven air samples			
Field Duplicate Pairs	None			
Field Blanks	None			

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (September 2016).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrument	Performance	Checks:
------------	-------------	---------

Within Criteria	Exceedance/Notes
Υ	

Initial Calibration:

Within Criteria	Exceedance/Notes
Υ	

Continuing Calibration:

Within Criteria	Exceedance/Notes
Υ	

Calibration Verification:

Within Criteria	Exceedance/Notes
NA	

Method blanks:

Within Criteria	Exceedance/Notes
Y	

Field blanks:

Within Criteria	Exceedance/Notes
NA	



Interference Check Sam	ples (ICS)) (ICP	metals	only):
------------------------	------------	--------	--------	--------

Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	



Field dupli	cates:
Within Criteria	Exceedance/Notes
NA	
LCSs/LCSD	s:
Within Criteria	Exceedance/Notes
Υ	
Sample dil Within	utions:
Criteria	Exceedance/Notes
NA	
Re-extract	ion and reanalysis:
Within Criteria	Exceedance/Notes
NA	
Second col	umn confirmation (GC and HPLC analyses only):
Within Criteria	Exceedance/Notes
NΛ	

Internal Standards:

Within Criteria	Exceedance/Notes
Υ	



Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	The laboratory qualified results between the RL and method detection limit as estimated (J).

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

Other labe	Sin y 1:
Within	Even adams / Nintes
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:

	The analyte was positively identified, the associated value is the approximate consentration 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.
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.





TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16111403

Sample Identification GRPCE-39-IA BASEMENT) Date Sampled: 11/22/2016

Lab Number: 006A Date Received: 11/22/2016

Sample Type: Air, Can Analysis Date: 11/22/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -2.05 psig
Final Pressure: -2.05 psig

Canister ID: 14570

Client:

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1.2-Dichloroethene	0.040	0 024	0.16	0.0103	0.0061	0.04	1	y
127-18-4	Tetrachloroethene	0.34	0.036	0.27	0.050	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	2.0	0.019	0.16	0.50	0.0049	0.04	1	
79-01-6	Trichloroethene	0.113	0.021	0.21	0.0203	0 0039	0.04	1	1
75-01-4	Vinyl Chloride	NE.	0.022	0.10	U) ND	0 0088	0.044) 1	



Date: 30-Nov-16

^{-,} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



TETRA TECH

Date: 30-Nov-16

Date Sampled: 11/22/2016

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16111403 Sample Identification GRPCE-39-IA MAIN) Lab Number:

005A Date Received: 11/22/2016 Air, Can Analysis Date: 11/22/2016 EPA Method TO-15A Analyst: DRS

Initial Pressure: -1.71 psig Final Pressure: -1.71 psig Canister ID: 14403

Client:

Sample Type:

Test Method:

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qu
156-59-2	cîs-1.2-Dichloroethene	ND 0.024 (0.16 U) ND 0.0061 (0.04 U) 1
127-18-4	Tetrachloroethene	0.54 0.036 0.27 0.080 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	3.4 0.019 0.16 0.86 0.0049 0.04 1
79-01-6	Trichloroethene	0.11 0 021 0.21 0.020 0.0039 0.04 1
75-01-4	Vinyl Chloride	AID 0.022 (0.104) AD 0.0088 (0.044) 1



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J: Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 30-Nov-16

Project: GRAND RAPIDS EMERGENCY RESPONSE

Sample Identification GRPCE-39-IA-1

TETRA TECH

Date Sampled: 11/22/2016

Work Order No: 16111403

Lab Number: 004A

Date Received: 11/22/2016

Sample Type: Air, Can

Client:

Analysis Date: 11/22/2016

Test Method: EPA Method TO-15A

Analyst: DRS

Initial Pressure: -3.65 psig Final Pressure: -3.65 psig

Canister ID:

14591

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qua
156-59-2	cis-1,2-Dichloroethene	ND 0.024 0.16 ND 0.0061 0.04 LD 1
127-18-4	Tetrachloroethene	0.34 0.036 0.27 0.050 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	1.7 0.019 0.16 0.44 0.0049 0.04 1
79-01-6	Trichloroethene	0.11 3 0 021 0.21 0.020 3 0.0039 0.04 1
75-01-4	Vinyl Chloride	ND 0.022 0.10 WD 0 0088 0.04 LD



- -; Information not available or not applicable.
- ND; Less than the indicated limit of detection (LOD)
- RL; Report Limit
- J; Value is between the MDL and Reporting Limit, estimated r
- MDL; Method Detection Limit

- B; Analyte detected in the associated Method Blank
- S; Spike Recovery outside accepted recovery limits
- R; RPD outside accepted recovery limits
- T; Tentatively Identified Compound (TIC)
- E; Value exceeds linear range of calibration curve



Date: 30-Nov-16

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16111403

Date Sampled: 11/22/2016

Date Received: 11/22/2016

Analysis Date: 11/22/2016 Analyst: DRS

Sample Identification GRPCE-39-IA

Lab Number:

003A

Sample Type:

Air, Can

Test Method:

EPA Method TO-15A

Initial Pressure:

-1.94 psig

Final Pressure:

-1.94 psig

Canister ID:

14478

Canister ID:	14478							-		
CAS#	An	alyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene		NE	0.024	0.16	W NO	0.0061	0.044) [
127-18-4	Tetrachloroethene		0.34	0.036	0.27	0.050	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene		1.6	0.019	0.16	0.40	0.0049	0.04	1	
79-01-6	Trichloroethene		0.32	0.021	0.21	0.060	0.0039	0 04	I	
75-01-4	Vinyl Chloride		ND	0.022	0.10	U ND	0 0088	(0.04 L)1	



J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 30-Nov-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16111403

Sample Identification GRPCE-40-IA- 1) Date Sampled: 11/22/2016

Lab Number: 001A

001A Date Received: 11/22/2016

Sample Type: Air, Can Analysis Date: 11/22/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -2.44 psig
Final Pressure: -2.44 psig

Canister ID: 14026

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qua
156-59-2	cis-1,2-Dichloroethene	0 079 3	0 024	0.16	0.020 J	0 0061	0.04	1	y
127-18-4	Tetrachloroethene	0 41	0 036	0.27	0.060	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	0 56	0 019	0.16	0.14	0.0049	0.04	1	
79-01-6	Trichloroethene	0 21	0 021	0.21	0.040	0.0039	0.04	1	
75-01-4	Vinyl Chloride	ND-	0 022	0.10	GH (L	0 0088	(0.04 L	01	



J: Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R: RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 30-Nov-16

Date Received: 11/22/2016

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16111403

Sample Identification GRPCE-40-IA-Date Sampled: 11/22/2016

Lab Number: 002A

> Analysis Date: 11/22/2016 Air, Can

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -2.45 psig Final Pressure: -2.45 psig Canister ID: 14580

Sample Type:

CAS#	Analyte	100000000000000000000000000000000000000	MDL ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichlorocthene	0.040 J	0 024	0.16	0.010J	0061	0.04	1	*
127-18-4	Tetrachloroethene	0.68	0.036	0.27	0.10	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	1.2	0.019	0.10	0.31	0.0049	0.04	1	
79-01-6	Trichloroethene	0.16 3	0 021	0.2	0.030	0.0039	0.04	1	8
75-01-4	Vinyl Chloride	ND-	0.022	0.10	4) NB	0 0088	0.04	1 (1	



^{-,} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL, Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E: Value exceeds linear range of calibration curve



Date: 30-Nov-16

Client: Project:	TETRA TECH GRAND RAPIDS EMERGENCY RESPONSE				Work Or	der No:	16111403	
Sample Iden	tification GRPCE-43-OA-				Date Sa	mpled:	11/22/2016	
Lab Number	r: 007A				Date Re	ceived:	11/22/2016	
Sample Type	e: Air, Can				Analysi	s Date:	e: 11/22/2016	
Test Method	t: EPA Method TO-15A				A	nalyst:	DRS	
Initial Press	ure: -0.49 psig							
Final Pressu								
Canister ID:								
CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV) DF	Qual
156-59-2	cis-1,2-Dichlorocthene	NB	0.024	(0.16	W -NB	0.0061	(0,041)	
127-18-4	Tetrachloroethene	0.27	0.036	0.27	0.040	0.0053	0.04	
156-60-5	trans-1,2-Dichloroethene	NE	0.019	0.16	MAN	0 0049	0.04 1	
79-01-6	Trichloroethene	0.117	0.021	0.21	(0.020)	0.0039	0.04 1	2
75-01-4	Vinyl Chloride	114	0.022	0.10	ILA) NE	0 0088	0.0411	



^{--,} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r T; Tentatively Identified Compound (TIC)

MDL: Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

E; Value exceeds linear range of calibration curve

Site Name	Grand Rapids VI ER	TDD No.	S05-0001-1605-010				
Document Tracking No.	1376B	TDD NO.	303-0001-1003-010				
Data Reviewer (signature and date)	Jeoaca A. Vickero December 16, 2016	Technical Reviewer (signature and date)	Hang N. Elis III 19 December 2016				
Laboratory Report No.	16120051	Laboratory	Bureau Veritas/Novi, MI				
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15					
Samples and Matrix	ples and Matrix Eight air samples (including a field duplicate)						
Field Duplicate Pairs	GRPCE-40-IA-	RPCE-40-IA- GRPCE-40-IA- DP					
Field Blanks	None						

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (September 2016).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrument	Performance	Checks
III JUI GIII CIII	I CITOTITIALICE	CIICCINS

/ithin riteria	Exceedance/Notes
Υ	

Initial Calibration:

Within Criteria	Exceedance/Notes
Υ	

Continuing Calibration:

Within Criteria	Exceedance/Notes
Υ	

Calibration Verification:

Within Criteria	Exceedance/Notes
NA	

Method blanks:

Within Criteria	Exceedance/Notes
Y	

Field blanks:

Within Criteria	Exceedance/Notes
NA	



Interference Check Samp	oles (ICS)	(ICP	metals	only):
-------------------------	------------	------	--------	------	----

Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	



Field d	luplic	ates:
---------	--------	-------

Wit Crite	hin eria	Exceedance/Notes
Υ	1	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Υ	

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
Υ	



Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	The laboratory qualified results between the RL and method detection limit as estimated (J).

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

Other labe	Sin y 1:
Within	Even adams / Nintes
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.





Date: 02-Dec-16

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16120051

Sample Identification GRPCE-40-IA-BASEMENT) Date Sampled: 12/1/2016

Lab Number:

007A

Sample Type:

Air, Can

Date Received: 12/1/2016

Test Method:

EPA Method TO-15A

Analysis Date: 12/1/2016

Initial Pressure:

Analyst: DRS

Final Pressure:

-2.24 psig -2.24 psig

Canister ID:

14159

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Q
156-59-2	cis-1,2-Dichloroethene	NO 0.024 0.16 W NO 0.0061 (0.04 W)
127-18-4	Tetrachloroethene	0.27 0.036 0.27 0.040 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	2.9 0.019 0.16 0.72 0.0049 0.04 1
79-01-6	Trichloroethene	0.054 5 0.021 0.21 0.010 5 0.0039 0.04 1
75-01-4	Vinyl Chloride	ND 0.022 0.10 NB 0 0088 0.04 U 1



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 02-Dec-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16120051

Sample Identification GRPCE-40-IA MAIN)

Date Sampled: 12/1/2016

Lab Number: 006A Date Received: 12/1/2016

Sample Type: Air, Can Analysis Date: 12/1/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -2.39 psig

Final Pressure: -2.39 psig
Canister ID: 14534

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qua
156-59-2	cis-1,2-Dichloroethene	ND 0.024 (0 164) ND 0 0061 (0.044) 1
127-18-4	Tetrachloroethene	0.27 0.036 0.27 0.040 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	2.4 0.019 0.16 0.60 0.0049 0.04 1
79-01-6	Trichloroethene	0.113 0.021 0.21 0.020 0.0039 0.04 1
75-01-4	Vinyl Chloride	ND 0.022 0.10 U ND 0.0088 1.04 U 1



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B. Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 02-Dec-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16120051

Sample Identification GRPCE-40-IA Date Sampled: 12/1/2016

Lab Number: 005A Date Received: 12/1/2016

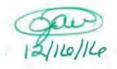
Sample Type: Air, Can Analysis Date: 12/1/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -2.12 psig

Final Pressure: -2.12 psig Canister ID: 14462

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qu
156-59-2	cis-1,2-Dichloroethene	ND 0.024 (0.16 W) 0.0061 (6.04 W) 1
127-18-4	Tetrachloroethene	0.27 0.036 0.27 0.040 0.0053 0.04 1
156-60-5	trans-1,2-Dichlorocthene	2.1 0.019 0.16 0.53 0.0049 0.04 1
79-01-6	Trichloroethene	0.054 3 0.021 0.21 0.010 3 0.0039 0.04 1
75-01-4	Vinyl Chloride	ND 0.022 (0.101) ND 0.0088 (0.041) 1



J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 02-Dec-16

Date Sampled: 12/1/2016

Date Received: 12/1/2016

Analysis Date: 12/1/2016

Analyst: DRS

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16120051

Sample Identification GRPCE-40-IA-

Lab Number: 003A

Sample Type: Air, Can

Test Method: EPA Method TO-15A

Initial Pressure: -2.42 psig
Final Pressure: -2.42 psig

Canister ID: 14578

Canister ID	14370								
CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	NO.	0.024	0.16	W NO	0 0061	(0.044	01	
127-18-4	Tetrachloroethene	0.34	0.036	0.27	0.050	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	1.4	0.019	0.16	0.35	0.0049	0.04	1	
79-01-6	Trichloroethene	0.32	0.021	0.21	0.060	0.0039	0.04	1	
75-01-4	Vinyl Chloride	ND	0.022	(010	U) HE	0 0088	0.04	1	



J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 02-Dec-16

Client:	TETRA TECH		
Project:	GRAND RAPIDS EMERGENCY RESPONSE	Work Order No:	16120051
Sample Identificat	tion GRPCE-40-IA-	Date Sampled:	12/1/2016
Lab Number:	004A	Date Received:	12/1/2016
Sample Type:	Air, Can	Analysis Date:	12/1/2016
Test Method:	EPA Method TO-15A	Analyst:	DRS
Initial Pressure:	-3.31 psig		
Final Pressure:	-3.31 psig		
Canister ID:	13990		

CAS#	Analyte		MDL ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	ND	0.024	(0.16	W NB	0 0061	0.044	1	
127-18-4	Tetrachlorocthene	0.41	0.036	0.27	0.060	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	1.5	0.019	0.16	0.39	0.0049	0.04	1	
79-01-6	Trichloroethene	0.32	0.021	0.21	0.060	0.0039	0.04	1	
75-01-4	Vinyl Chloride	ND NB	0.022	0.10	U HB	0 0088	0.044)1	



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r T; Tentatively Identified Compound (TIC)

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

E; Value exceeds linear range of calibration curve



Date: 02-Dec-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16120051

Sample Identification GRPCE-41-IA- (1) Date Sampled: 12/1/2016

Lab Number: 001A

001A Date Received: 12/1/2016
Air, Can Analysis Date: 12/1/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -2.09 psig
Final Pressure: -2.09 psig

Canister ID: 13997

Sample Type:

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	0.040	0 024	0.16	0 010J	0 0061	0.04	1	1
127-18-4	Tetrachloroethene	0.34	0.036	0.27	0.050	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	0 12	0 019	0.16	0.030 J	0 0049	0.04	1	1
79-01-6	Trichlorocthene	0113	0 021	0.21	0.0203	0 0039	0.04	1	
75-01-4	Vinyl Chloride	NE	0 022	0.10	U) NO	0.0088	(0.04L	10	- 0



^{-;} Information not available or not applicable.

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 02-Dec-16

Analysis Date: 12/1/2016

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16120051

Sample Identification GRPCE-41-IA- 2) Date Sampled: 12/1/2016

Lab Number: 002A

14617

Trichloroethene

Vinyl Chloride

002A Date Received: 12/1/2016

Sample Type: Air, Can

EPA Method TO-15A Analyst: DRS

Initial Pressure: -2.23 psig
Final Pressure: -2.23 psig

Test Method:

Canister ID:

79-01-6

75-01-4

Results MDL RL Results MDL RL (ppbV) DF Qual (ug/m³) (ug/m³) (ug/m3) (ppbV) (ppbV) CAS# Analyte 0.16 LU ND 0 0061 0.04 1 156-59-2 cis-1.2-Dichloroethene 0.024 127-18-4 Tetrachloroethene 0.41 0.036 0.27 0.060 0.0053 0.04 trans-1,2-Dichloroethene 0.59 0.019 0.16 0.15 0.0049 0.04 156-60-5

12/11e/16

0.020 5 0 0039

ND 0 0088

0.04

0.0411

0.21

8.10 L

0.021

0.022

0.11 J

J; Value is between the MDL and Reporting Limit, estimated r

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 02-Dec-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16120051

Sample Identification GRPCE-44-OA-

Lab Number: 008A Date Received: 12/1/2016

Sample Type: Air, Can Analysis Date: 12/1/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -2.64 psig
Final Pressure: -2.64 psig

Canister ID: 14574

Cimioter 12		
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m²) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 (0.164) ND 0.0061 (0.044) 1
127-18-4	Tetrachloroethene	0.34 0.036 0.27 0.050 0.0053 0.04 1
156-60-5	trans-1.2-Dichloroethene	ND 0.019 0.164 ND 0.0049 0.0441
79-01-6	Trichloroethene	0.054 3 0.021 0.21 0.010 0.0039 0.04 1
75-01-4	Vinyl Chloride	ND 0.022 (0.10L) ND 0 0088 (0.04L) 1



B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve

Site Name	Grand Rapids VI ER	TDD No.	SOF 0001 160F 010
Document Tracking No.	1376C	IDD NO.	S05-0001-1605-010
Data Reviewer (signature and date)	Jeoaca A. Vickers December 16, 2016	Technical Reviewer (signature and date)	Hang N. Elis III 19 December 2016
Laboratory Report No.	16120222	Laboratory	Bureau Veritas/Novi, MI
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15	
Samples and Matrix	Seven air samples		
Field Duplicate Pairs	None		
Field Blanks	None	_	

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (September 2016).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteri	FXCEEdanCE/NOTES
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrument	Performance	Checks:
------------	-------------	---------

Within Criteria	Exceedance/Notes
Υ	

Initial Calibration:

Within Criteria	Exceedance/Notes
Υ	

Continuing Calibration:

Within Criteria	Exceedance/Notes
Υ	

Calibration Verification:

Within Criteria	Exceedance/Notes
NA	

Method blanks:

Within Criteria	Exceedance/Notes
Y	

Field blanks:

Within Criteria	Exceedance/Notes
NA	



Interference Check Sam	ples (ICS)) (ICP	metals	only):
------------------------	------------	--------	--------	--------

Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	



Field dupli	cates:
Within Criteria	Exceedance/Notes
NA	
LCSs/LCSD	s:
Within Criteria	Exceedance/Notes
Υ	
Sample dil Within	utions:
Criteria	Exceedance/Notes
NA	
Re-extract	ion and reanalysis:
Within Criteria	Exceedance/Notes
NA	
Second col	umn confirmation (GC and HPLC analyses only):
Within Criteria	Exceedance/Notes
NΛ	

Internal Standards:

Within Criteria	Exceedance/Notes
Υ	



Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	The laboratory qualified results between the RL and method detection limit as estimated (J).

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

Other labe	Sin y 1:
Within	Even adams / Nintes
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:

	The analyte was positively identified, the associated value is the approximate consentration 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.
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.





Date: 06-Dec-16

Date Received: 12/5/2016

Analysis Date: 12/5/2016

Analyst: DRS

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16120222

Sample Identification GRPCE-41-IA BASEMENT) Date Sampled: 12/4/2016

Lab Number: 006A

OUUM

Sample Type: Air, Can

Test Method: EPA Method TO-15A

Initial Pressure:

-1.65 psig

Final Pressure: -1.65 psig

Canister ID: 14211

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	0 040	0 024	0.16	0.0103	0 0061	0.04	1	1
127-18-4	Tetrachloroethenc	0.47	0.036	0.27	0.070	0 0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	7.5	0.019	0.16	1.9	0.0049	0.04	1	
79-01-6	Trichloroethene	0113	0.021	0.21	0.020-	0 0039	0.04	1	Y
75-01-4	Vinyl Chloride	H	0.022	(0.10)	A) HD	0 0088	0.044	1	



^{-:} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Vinyl Chloride

Date: 06-Dec-16

6120222	
2/4/2016	
2/5/2016	
2/5/2016	
DRS	
RL (ppbV) DF	Qual
0.04W I	
0.04 1	
,	0.0411 I



ND 0.0088

75-01-4

-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

0.1014

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 06-Dec-16

Date Sampled: 12/4/2016

Date Received: 12/5/2016

Analysis Date: 12/5/2016 Analyst: DRS

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16120222

Sample Identification GRPCE-41-IA-

004A

Lab Number: Sample Type:

Air, Can

Test Method:

EPA Method TO-15A

Initial Pressure:

-2.26 psig

Final Pressure:

-2.26 psig

Canister ID:

13999

CAS#	Analyte		MDL ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	(0.040J	0 024	0.16	(0010J	0061	0.04	t	Y
127-18-4	Tetrachloroethene	0.81	0.036	0.27	0.12	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	7.9	0.019	0.16	2.0	0.0049	0.04	1	
79-01-6	Trichloroethene	0.16 3	0 021	0.21	0.0303	0039	0.04	1	1
75-01-4	Vinyl Chloride	ND	0 022	(-0.10)	NĐ	-0.0088	0 044	DI	



-; Information not available or not applicable.

ND, Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



cis-1,2-Dichloroethene

trans-1.2-Dichloroethene

Tetrachloroethene

Trichloroethene

Vinyl Chloride

156-59-2

127-18-4

156-60-5

79-01-6

75-01-4

Date: 06-Dec-16

0.044

0.04

0.04

0.04

0.041

Client:	TETRA TECH								
Project:	GRAND RAPIDS EMERGENCY RESPONSE	8			Work Or	der No:	1612022	2	
Sample Identificat	tion GRPCE-41-IA-1168(MAIN)				Date Sa	mpled:	12/4/201	6	
Lab Number:	003A				Date Re	ceived:	12/5/201	6	
Sample Type:	Air, Can				Analys	is Date:	12/5/201	6	
Test Method:	EPA Method TO-15A				A	nalyst:	DRS		
Initial Pressure:	-1.91 psig								
Final Pressure:	-1.91 psig								
Canister ID:	14068								
CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual



ND- 0 0088

0.0053

0.0049

0.0039

0.16 U ND 0 0061

0 080

1.7

0.070

0.27

0.16

0.21

0.104

0.024

0.036

0.019

0 021

0 022

0.54

6.8

0.38

-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL: Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 06-Dec-16

Date Received: 12/5/2016

Analysis Date: 12/5/2016

Analyst: DRS

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16120222

Sample Identification GRPCE-42-IA-1)

Date Sampled: 12/4/2016

cample toentmenton Grd CC 12 LT

Lab Number: 001A

Sample Type: Air, Can

Test Method: EPA Method TO-15A

Initial Pressure: -2.96 psig Final Pressure: -2.96 psig

Canister ID: 14396

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	0 040	0 024	0.16	0.0103	0 0061	0.04	1	1
127-18-4	Tetrachloroethene	0 61	0 036	0.27	0.090	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	1.3	0 019	0.16	0.33	0.0049	0.04	1	
79-01-6	Trichloroethene	0 16 3	0 021	0.21	0.030	0039	0.04	1	1
75-01-4	Vinyl Chloride	ND	0 022	0.10	U) NB	0 0088	0.04	MI	



^{--,} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 06-Dec-16

Client: TETRA TECH

GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16120222 Project:

Sample Identification GRPCE-42-IA-Date Sampled: 12/4/2016

Lab Number: 002A Date Received: 12/5/2016

Sample Type: Air, Can

Analysis Date: 12/5/2016 EPA Method TO-15A

Initial Pressure: -2.65 psig

Final Pressure: -2.65 psig Canister ID: 14076

Test Method:

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m ³) (ug/m ³) (ug/m ³) (ppbV) (ppbV) (ppbV) DF Qu
156-59-2	cis-1.2-Dichloroethene	NB 0.024 (0.16 W ND 0 0061 (0.04 L) 1
127-18-4	Tetrachloroethene	0.68 0.036 0.27 0.10 0.0053 0.04 1
156-60-5	trans-1,2-Dichlorocthene	3.6 0.019 0.16 0.90 0.0049 0.04 1
79-01-6	Trichloroethene	0.11 3 0.021 0.21 0.020 0039 0.04 1
75-01-4	Vinyl Chloride	NB 0.022 0.10 U NB 0.0088 (0.04 U) 1



Analyst: DRS

^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Trichloroethene

Vinyl Chloride

Date: 06-Dec-16

Client:	TETRA TECH							
Project:	GRAND RAPIDS EMERGENCY RESPONSE			Work Order	No:	16120222	2	
Sample Identi	fication GRPCE-45-OA			Date Samp	led:	12/4/2010	5	
Lab Number:	007A			Date Receiv	ved:	12/5/2010	5	
Sample Type:	Air, Can			Analysis D	ate:	12/5/2010	6	
Test Method:	EPA Method TO-15A			Anal	lyst:	DRS		
Initial Pressur	re: -2.17 psig							
Final Pressure	e: -2.17 psig							
Canister ID:	14291							
CAS#	Analyte	Results MDL (ug/m³) (ug/m³)	RL (ug/m³)		1DL pbV)	RL (ppbV)	DF	Qual
156-59-2 127-18-4 156-60-5	cis-1,2-Dichloroethene Tetrachloroethene trans-1,2-Dichloroethene	0.20 J 0.03	6 0,27	0.030 7 0.		0.04	1	Y



0.0039

0.04

79-01-6

75-01-4

0.021

0.022

0.21

0.10

^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r T; Tentatively Identified Compound (TIC)

MDL, Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

E; Value exceeds linear range of calibration curve

Site Name	Grand Rapids VI ER	TDD No.	S05-0001-1605-010			
Document Tracking No.	1376D	וטט וויט.	303-0001-1603-010			
Data Reviewer (signature and date)	Jeogra A. Vickers December 16, 2016	Technical Reviewer (signature and date)	Hang N. Ellis III 19 December 2016			
Laboratory Report No.	16120525	Laboratory	Bureau Veritas/Novi, MI			
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15				
Samples and Matrix	Eight air samples (including a field duplicate)					
Field Duplicate Pairs	GRPCE-42-IA- MAIN)/GRPCE-42-IA- MAIN)-DP					
Field Blanks	None					

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (September 2016).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Withi Criter	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



1	D	
instrument	Performance	unecks:

	thin teria	Exceedance/Notes
,	Υ	

Initial Calibration:

Within Criteria	Exceedance/Notes
Υ	

Continuing Calibration:

Within Criteria	Exceedance/Notes
Υ	

Calibration Verification:

Within Criteria	Exceedance/Notes
NA	

Method blanks:

Within Criteria	Exceedance/Notes
Υ	

Field blanks:

Within Criteria	Exceedance/Notes
NA	



Interference Check Samp	oles (ICS)	(ICP	metals	only):
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Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	



Field d	luplic	ates:
---------	--------	-------

Wit Crite	hin eria	Exceedance/Notes
Υ	1	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Υ	

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	
Υ		



Target analyte identification:

Within Criteria	Exceedance/Notes	
Υ		

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes	
Υ	The laboratory qualified results between the RL and method detection limit as estimated (J).	

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

other lobeary).		
Within	Fuencial and Alleton	
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.			





Tetrachloroethene

Trichloroethene

Vinyl Chloride

trans-1,2-Dichloroethene

Date: 12-Dec-16

Client:	TETRA TECH	W-1-0-1-N-16120525
Project:	GRAND RAPIDS EMERGENCY RESPONSE	Work Order No: 16120525
Sample Identificat	tion GRPCE-42-IA-BASEMENT)	Date Sampled: 12/8/2016
Lab Number:	007A	Date Received: 12/8/2016
Sample Type:	Air, Can	Analysis Date: 12/8/2016
Test Method:	EPA Method TO-15A	Analyst: DRS
Initial Pressure:	-2.02 psig	
Final Pressure:	-2.02 psig	
Canister 1D:	14579	
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qu:
156-59-2 cis-	1,2-Dichloroethene	ND 0.024 (0.164) ND 0.0061 (0.044) 1



0.0053

b.0049

0.0039

0.0088

0.04

0.04

10 04L

127-18-4

156-60-5

79-01-6

75-01-4

0.036

0.019

0.021

0.022

0.11 J

0.27

0.16

0.21

0.10

0.060

2.6

0.020 7

^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 12-Dec-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16120525

Sample Identification GRPCE-42-IA-

MAIN) Date Sampled: 12/8/2016

Lab Number:

005A

Date Received: 12/8/2016

Sample Type:

Air, Can

Analysis Date: 12/8/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-2.64 psig

Final Pressure:

-2.64 psig

Canister ID:

14069

Camater 12	. 14009	
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qua
156-59-2	cis-1,2-Dichloroethene	ND 0.024 0.16 4 ND 0.0061 0.044 1
127-18-4	Tetrachloroethene	0.27 0.036 0.27 0.040 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	1.9 0.019 0.16 0.49 0.0049 0.04 1
79-01-6	Trichloroethene	0.054 3 0.021 0.21 0.010 3 .0039 0.04 1
75-01-4	Vinyl Chloride	NO 0.022 0.10 NO 0.0088 0.04 U 1



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J. Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 12-Dec-16

Date Received: 12/8/2016

Analysis Date: 12/8/2016

Analyst: DRS

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16120525

Sample Identification GRPCE-42-IA Date Sampled: 12/8/2016

Lab Number: 006A

OUUA

Sample Type: Air

Air, Can

Test Method:

EPA Method TO-15A

Initial Pressure: Final Pressure: -2.27 psig

Canister ID:

14609

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qu
156-59-2	cīs-1,2-Dichloroethene	ND 0.024 0.161 ND 0.0061 0.044 1
127-18-4	Tetrachloroethene	0.27 0.036 0.27 0.040 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	2.2 0.019 0.16 0.56 0.0049 0.04 1
79-01-6	Trichloroethene	0.054 5 0 021 0.21 0.010 5 0.0039 0.04 1
75-01-4	Vinyl Chloride	MD 0.022 (0.104) NO 00088 (0.044) 1



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Trichloroethene

Vinyl Chloride

Date: 12-Dec-16

Client:	TETRA TECH	
Project:	GRAND RAPIDS EMERGENCY RESPONSE	Work Order No: 16120525
Sample Identific	ation GRPCE-42-IA- (BASEMENT)	Date Sampled: 12/8/2016
Lab Number:	004A	Date Received: 12/8/2016
Sample Type:	Air, Can	Analysis Date: 12/8/2016
Test Method:	EPA Method TO-15A	Analyst: DRS
Initial Pressure:	-2.8 psig	
Final Pressure:	-2.8 psig	
Canister ID:	13995	
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
127-18-4 Te	s-1,2-Dichloroethene etrachloroethene	0.54 0.036 0.27 0.080 0.0053 0.04 1
156-60-5 tr	ans-1,2-Dichloroethene	5.4 0.019 0.16 1.4 0.0049 0.04 1

0.11J

0 021

0.022

0.101



0.0088

0.04

0.04 LI

0.020 3 0 0039

79-01-6

75-01-4

^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL: Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 12-Dec-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16120525

Sample Identification GRPCE-42-IA-Date Sampled: 12/8/2016

Lab Number: 003A Date Received: 12/8/2016

Sample Type: Air, Can Analysis Date: 12/8/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -2.84 psig

Final Pressure: -2.84 psig Canister ID: 14399

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qu
156-59-2	cis-1,2-Dichloroethene	NO 0.024 0.164 NO 0.0061 0.044 1
127-18-4	Tetrachloroethene	0.34 0.036 0.27 0.050 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	3.8 0.019 0.16 0.97 0.0049 0.04 1
79-01-6	Trichloroethene	0.16 5 0 021 0.21 0.030 5 0.0039 0.04 1
75-01-4	Vinyl Chloride	ND 0 022 (0.10 L) ND 0 0088 (0.04 L) 1



^{--;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated \boldsymbol{r}

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 12-Dec-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16120525

Sample Identification GRPCE-43-IA

Date Sampled: 12/8/2016

Lab Number:

001A

Sample Type:

Date Received: 12/8/2016

Air, Can

Analysis Date: 12/8/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-2.61 psig

Final Pressure:

-2.61 psig

Canister ID:

14133

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichlorocthene	0 040 3	0 024	0.16	0.010 3	0.0061	0.04	1	1
127-18-4	Tetrachloroethene	0 20	0 036	0.27	0.030 3	0.0053	0.04	1	•
156-60-5	trans-1,2-Dichloroethene	0 24	0 019	0.16	0.060	0.0049	0.04	1	
79-01-6	Trichloroethene	0113	0 021	0.21	0.020 3	0 0039	0.04	1	1
75-01-4	Vinyl Chloride	Q I4	0 022	0.10	CHA ()	0 0088	0.040	DI	



- -; Information not available or not applicable.
- ND; Less than the indicated limit of detection (LOD)
- RL; Report Limit
- J; Value is between the MDL and Reporting Limit, estimated r
- MDL; Method Detection Limit

- B; Analyte detected in the associated Method Blank
- S; Spike Recovery outside accepted recovery limits
- R; RPD outside accepted recovery limits
- T; Tentatively Identified Compound (TIC)
- E; Value exceeds linear range of calibration curve



cis-1.2-Dichloroethene

trans-1,2-Dichloroethene

Tetrachloroethene

Trichloroethene

Vinyl Chloride

Date: 12-Dec-16

0 04 LI

0.04

0.04

0.04

Client:	TETRA TECH								
Project:	GRAND RAPIDS EMERGENCY RESPO	NSE		,	Work Or	der No:	1612052	5	
Sample Identification	tion GRPCE-43-IA 2)				Date Sa	mpled:	12/8/201	6	
Lab Number:	002A				Date Re	ceived:	12/8/201	6	
Sample Type:	Air, Can				Analysi	is Date:	12/8/201	6	
Test Method:	EPA Method TO-15A				A	analyst:	DRS		
Initial Pressure:	-3.0 psig								
Final Pressure:	-3.0 psig								
Canister 1D:	14028								
CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual

ND

ND

0.41

1.2 0.054 J 0.024

0 036

0 019

0 021

0.022



0 0061

0.0053

0.0049

ND 0 0088 (0.04L

156-59-2

127-18-4

156-60-5

79-01-6

75-01-4

0.16U

0.10

0.27

0.16

NB

0.010 0.0039

0.060

0.31

^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E: Value exceeds linear range of calibration curve



Date: 12-Dec-16

Client: TETRA TECH

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16120525

Sample Identification GRPCE-46-OA

Date Sampled: 12/8/2016

Lab Number:

008A

Date Received: 12/8/2016

Sample Type:

Project:

Air, Can

Analysis Date: 12/9/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-2.52 psig

Final Pressure:

-2.52 psig

Canister 1D:	: 14576	
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qua
156-59-2	cis-1,2-Dichloroethene	ND 0.024 (016W) ND 00061 (004W) 1
127-18-4	Tetrachloroethene	0.068 7 0.036 0.27 0.010 7 0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	ND 0.019 0.16 4 ND 0.0049 0.044 1
79-01-6	Trichloroethene	0.021 0.21 0.0039 0.04 1
75-01-4	Vinyl Chloride	0.022 0.10 NO 0.0088 0.04 1



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL, Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve

Site Name	Grand Rapids VI ER	TDD No.	SOF 0001 160F 010	
Document Tracking No.	1376E	וטט אס.	S05-0001-1605-010	
Data Reviewer (signature and date)	Jeogra A. Vickers December 16, 2016	Technical Reviewer (signature and date)	Hang N. Ellis III 19 December 2016	
Laboratory Report No.	16120814	Laboratory	Bureau Veritas/Novi, MI	
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15		
Samples and Matrix	Nine air samples (including two field duplica	ates)		
Field Duplicate Pairs	GRPCE-43-IA-BASEMENT)/GRPCE-43-IA-BASEMENT)-DP and GRPCE-43-IA-BASEMENT)-DP and DP			
Field Blanks	None			

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (September 2016).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Y	

Sample preservation, receipt, and holding times:

Within	Exceedance/Notes
Criteria	Exceedance/Notes
Υ	



nstrument Performance Checks: Within	
Criteria	Exceedance/Notes
Y	
nitial Calibration:	
Within	Exceedance/Notes
Criteria	
Υ	
Continuing Calibration:	
Within	Exceedance/Notes
Criteria	
Υ	
Calibration Verification:	
Within	- 1 (0)
Within Criteria	Exceedance/Notes
	Exceedance/Notes
Criteria	Exceedance/Notes
Criteria	Exceedance/Notes
NA NA	
Criteria NA Method blanks:	Exceedance/Notes Exceedance/Notes
Criteria NA Method blanks: Within	
Criteria NA Method blanks: Within Criteria Y	
Criteria NA Method blanks: Within Criteria	
Criteria NA Method blanks: Within Criteria Y	



NA

Interference Check	k Samples	(ICS) (IC	P metal	s only):
--------------------	-----------	-----------	---------	----------

Within Criteria	Exceedance/Notes
Criteria	
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	



Field duplic	cates:
Within	
Criteria	Exceedance/Notes
Y	
LCSs/LCSDs	:
Within	Exceedance/Notes
Criteria	Exceedince/ Notes
Υ	
Sample dil	utions:
Within	Exceedance/Notes
Criteria	Exceedance/Notes
NA	
Re-extracti	on and reanalysis:
Within	Exceedance/Notes
Criteria	Exceedance/Notes
NA	
Second col	umn confirmation (GC and HPLC analyses only):
Within	Exceedance/Notes
Criteria	Exceedance/Notes
NA	
Internal Sta	andards:
Within	Evenodance/Notes
Critoria	Exceedance/Notes



Target analyte identification:

Within Criteria	Exceedance/Notes
Y	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes The laboratory qualified results between the RL and method detection limit as estimated (I)	
Υ	The laboratory qualified results between the RL and method detection limit as estimated (J).	

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

- tille	·····/1·
Within	Exceedance/Notes
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.





Date: 15-Dec-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 16120814

Sample Identification GRPCE-43-IA-

BASEMENT) Date Sampled: 12/13/2016

Lab Number:

007A

Date Received: 12/14/2016

Sample Type:

Air, Can

Analysis Date: 12/14/2016

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-2.17 psig

Final Pressure:

-2.17 psig

Canister ID:

14541

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF	Qual
156-59-2	cis-1,2-Dichloroethene	0.024 (0.16 4) NB 0 0061 (0.04 14) 1	
127-18-4	Tetrachloroethcne	0.47 0.036 0.27 0.070 0.0053 0.04 1	
156-60-5	trans-1,2-Dichloroethene	8.7 0.019 0.16 2.2 0.0049 0.04 1	
79-01-6	Trichloroethene	0.11 0.021 0.21 0.020 0.0039 0.04 1	1
75-01-4	Vinyl Chloride	ND 0.022 (0.104) ND 0.0088 (0.044) 1	



-; Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



cis-1.2-Dichlorocthene

trans-1.2-Dichloroethene

Tetrachloroethene

Trichloroethene

Vinyl Chloride

Date: 15-Dec-16

Client: Project:	TETRA TECH GRAND RAPIDS EMERGENCY RESPO	NSE			Work Or	der No:	1612081	4	
	tion GRPCE-43-IA-BASEMENT				1,411,43		12/13/20	-	
Lab Number:	008A						12/14/20		
Sample Type:	Air, Can				Analys	is Date:	12/14/20	16	
Test Method:	EPA Method TO-15A				A	Analyst:	DRS		
Initial Pressure:	-2.09 psig								
Final Pressure:	-2.09 psig								
Canister ID:	14073								
CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Ou



0.0061

0.0053

0.0049

0 0088

0.020 3 0.0039

TO 04LD1

0.04

0.04

0.04

0.0411

156-59-2

127-18-4

156-60-5

79-01-6

75-01-4

0.024

0.036

0.019

0.021

0.022

NB

0.47

8.6

0.113

0.164

0.070

2.2

0.27

0.16

0.21

0.10

^{--;} Information not available or not applicable.

ND: Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Client:

Canister ID:

75-01-4

TETRA TECH

14121

Vinyl Chloride

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No. 16120814

Sample Identification GRPCE-43-IA- MAIN) Date Sampled: 12/13/2016

Lab Number: 006A Date Received: 12/14/2016

Sample Type: Air, Can Analysis Date: 12/14/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: 2.62 psig
Final Pressure: 2.62 psig

RL Results MDL RL Results MDL (ug/m³) (ug/m3) (ug/m³) (ppbV) (ppbV) (ppbV) CAS# Analyte DF Qual cis-1,2-Dichlorocthene 0.024 0.16 W ND 0.0061 6.044 NO 156-59-2 0.04 0.27 0.040 0.0053 127-18-4 Tetrachloroethene 0.27 0.036 trans-1.2-Dichloroethene 1.3 0.019 0.16 0.33 0.0049 0.04 156-60-5 0.054 J 0 021 0.21 0.010 3 0.0039 0.04 79-01-6 Trichloroethene

ND

0.022



0.041

0.10 W ND 0 0088

Date: 15-Dec-16

-, Information not available or not applicable.

ND: Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL, Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 15-Dec-16

Date Received: 12/14/2016

Analysis Date: 12/14/2016

Analyst: DRS

Client: TETRA TECH

GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16120814 Project:

Sample Identification GRPCE-43-IA-Date Sampled: 12/13/2016

004A Lab Number:

Sample Type: Air, Can

EPA Method TO-15A Test Method:

Initial Pressure: -2.79 psig -2.79 psig Final Pressure:

Canister ID. 14126

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qua
156-59-2	cis-1,2-Dichlorocthene	ND 0.024 (0.164) ND 0.0061 (0.044) 1
127-18-4	Tetrachloroethene	0.68 0.036 0.27 0.10 0.0053 0.04 1
156-60-5	trans-1,2-Dichlorocthene	6.0 0.019 0.16 1.5 0.0049 0.04 1
79-01-6	Trichloroethene	0.11 5 0.021 0.21 0.020 5 0.0039 0.04 1 2
75-01-4	Vinyl Chloride	ND 0.022 0.10 ND 0 0088 0.04 L 1



^{-,} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL: Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T: Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Tetrachloroethene

Trichloroethene

Vinyl Chloride

trans-1,2-Dichloroethene

Date: 15-Dec-16

Client:	TETRA TECH								
Project:	GRAND RAPIDS EMERGENCY RESPONSE				Work Or	der No:	1612081	4	
Sample Identification	tion GRPCE-43-IA-1168(BASEMENT)-DP				Date Sa	mpled:	12/13/20	16	
Lab Number:	005A				Date Re	ceived:	12/14/20	16	
Sample Type:	Air, Can				Analysi	is Date:	12/14/20	16	
Test Method:	EPA Method TO-15A				A	analyst:	DRS		
Initial Pressure:	-3.38 psig								
Final Pressure:	-3.38 psig								
Canister ID:	14124								
CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2 cis-	1,2-Dichloroethene	ND	. 0.024	0.16	4) 141	0 0061	0044) 1	



0.04

0.04

0.04

0.04 L

0.0053

0.0049

0.020 丁/ 0039

127-18-4

156-60-5

79-01-6

75-01-4

0.036

0.019

0.021

0.022

5.2

0.11 3

0.27

0.16

0.21

0.080

1.3

0.10 U ND 0 0088

^{-:} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Vinyl Chloride

Date: 15-Dec-16

Client:		TETRA TECH	
Project:		GRAND RAPIDS EMERGENCY R	ESPONSE Work Order No: 16120814
Sample Ide	entificati	on GRPCE-43-IA-	Date Sampled: 12/13/2016
Lab Numbe	er:	003A	Date Received: 12/14/2016
Sample Typ	pe:	Air, Can	Analysis Date: 12/14/2016
Test Metho	od:	EPA Method TO-15A	Analyst: DRS
Initial Pres	ssure:	-2.54 psig	
Final Press	sure:	-2.54 psig	
Canister II	D:	14079	
CAS#		Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qu
156-59-2	cis-1	.2-Dichloroethene	0.024 (0.164) ND 0.0061 (0.044) 1
127-18-4	Tetra	achloroethene	0.47 0.036 0.27 0.070 0.0053 0.04 1
156-60-5	trans	-1,2-Dichloroethene	5.4 0.019 0.16 1.4 0.0049 0.04 1
79-01-6	Trick	loroethene	0.21 0.021 0.21 0.040 0.0039 0.04 1



ND 0 0088

75-01-4

0.022

^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R, RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 15-Dec-16

Client: TETRA TECH

GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16120814 Project:

Sample Identification GRPCE-44-IA-1) Date Sampled: 12/13/2016

Lab Number: 001A

Date Received: 12/14/2016 Air, Can Analysis Date: 12/14/2016

Test Method:

EPA Method TO-15A Analyst: DRS

Initial Pressure: -2.44 psig Final Pressure: -2.44 psig Canister ID: 14582

Sample Type:

CAS#	Analyte	Results (ug/m³)	MDL (ug/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	0.079	0.024	0.16	0.020 J	0061	0.04	1	8
127-18-4	Tetrachloroethene	0.41	0.036	0.27	0.060	.0053	0.04	I	
156-60-5	trans-1,2-Dichloroethene	1.0	0.019	0.16	0.26	0.0049	0.04	1	
79-01-6	Trichlorocthene	0.16	0.021	0.21	0.0303	0 0039	0.04	1	1
75-01-4	Vinyl Chloride	ME	0.022	0.10	U) NB	0 0088	(0.04 L	DI	



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J. Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 15-Dec-16

Analyst: DRS

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16120814

Sample Identification GRPCE-44-IA-Date Sampled: 12/13/2016

Lab Number:

EPA Method TO-15A

002A Date Received: 12/14/2016

Sample Type:

Test Method:

Air, Can Analysis Date: 12/14/2016

Initial Pressure: -2.88 psig Final Pressure: -2.88 psig

Canistor ID. 14204

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qu
156-59-2	cis-1,2-Dichloroethene	NO 0.024 (0.164) NO 0.0061 (0.044) 1
127-18-4	Tetrachloroethene	0.47 0.036 0.27 0.070 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	2.1 0.019 0.16 0.54 0.0049 0.04 1
79-01-6	Trichloroethene	0.11 5 0 021 0.21 0.020 5 0.0039 0.04 1
75-01-4	Vinyl Chloride	ND 0 022 0,10 W ND 0 0088 0.04W 1



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 15-Dec-16

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 16120814

Sample Identification GRPCE-47-OA

Date Sampled: 12/13/2016

Lab Number: 009A Date Received: 12/14/2016

Sample Type: Air, Can Analysis Date: 12/14/2016

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -1.74 psig

Final Pressure: -1.74 psig

Canister ID: 14134

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0.024 0.16 U ND 0.0061 (104 U) 1
127-18-4	Tetrachlorocthene	0.27 0.036 0.27 0.040 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	ND 0.019 (0.16L) ND 0.0049 (0.04L) I
79-01-6	Trichloroethene	0.054 3 0.021 0.21 0.010 3 0.0039 0.04 1
75-01-4	Vinyl Chloride	ND 0.022 (0.10 ND 0.0088 (0.04 L) 1



^{--;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J: Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R: RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



January 5, 2017

Betsy Nightingale On-Scene Coordinator U.S. Environmental Protection Agency Region 5 9311 Groh Road Grosse Ile, MI 48138-1697

Subject: Data Validation Report

Grand Rapids VI ER

EPA Contract No. EP-S5-13-01

Technical Direction Document No. S05-0001-1605-010

Document Tracking No. 1415

Dear Ms. Nightingale:

Tetra Tech, Inc. (Tetra Tech) is submitting this Data Validation Report for six air samples (including a field duplicate) collected at the Grand Rapids VI ER site. The samples were collected on December 13, 2016 and were analyzed for volatile organic compounds by ALS Environmental. Tetra Tech received the data on December 27, 2016.

Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines* (NFG) for Superfund Organic Methods Data Review (August 2014).

No rejection of results was required for this data set. The data is usable as qualified based on the findings of this validation effort.

If you have any questions regarding this Data Validation Report, please call me at (662) 681-5727.

Sincerely,

Jessica A. Vickers START Chemist

Enclosure

cc: Kevin Scott, Tetra Tech Program Manager

Michael Browning, Tetra Tech Project Manager

TDD File

Jesaca a Vickers

ATTACHMENT 1 DATA VALIDATION REPORT ALS SDG P1605832

Site Name	Grand Rapids VI ER	TDD No.	S05-0001-1605-010		
Document Tracking No.	1415	TDD NO.	303-0001-1003-010		
Data Reviewer (signature and date)	Jeoaca A. Vickers January 5, 2017	Technical Reviewer (signature and date)	Hang N. Ellis III		
Laboratory Report No.	P1605832	Laboratory	ALS Laboratories/Simi Valley, CA		
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15			
Samples and Matrix	Six air samples (including a field duplicate)				
Field Duplicate Pairs	GRPCE-07-IA-W)/GRPCE-07-IA-W)-DP				
Field Blanks	None				

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection of results was required for this data set. The data is usable as qualified based on the findings of this validation effort.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrument Performance Checks:

Within Criteria	Exceedance/Notes
Υ	

Initial Calibration:

Within Criteria	Exceedance/Notes	
N	The percent relative standard deviation exceeded the acceptance limit for trichloroethene; therefore, the associated non-detect results were qualified as estimated (UJ).	

Continuing Calibration:

Within Criteria	Exceedance/Notes
N	The percent difference exceeded the acceptance limit for trichloroethene; therefore, the associated non-detect results were qualified as estimated (UJ).

Calibration Verification:

Within Criteria	Exceedance/Notes
Υ	

Method blanks:

Within Criteria	Exceedance/Notes
Υ	



	EIA REGION S START CONTRACT
Field blank	s:
Within Criteria	Exceedance/Notes
NA	
Interferenc	te Check Samples (ICS) (ICP metals only):
Within Criteria	Exceedance/Notes
NA	
	nitoring compounds (surrogates and labeled compounds):
Within Criteria	Exceedance/Notes
Y	
'	
MS/MSD:	
Within Criteria	Exceedance/Notes
NA	
Post digest	ion spikes:
Within	Exceedance/Notes
Criteria	
NA	
Serial diluti	ions:
Within Criteria	Exceedance/Notes



NA

Laboratory duplicates:

Within Criteria	Exceedance/Notes
Υ	

Field duplicates:

Within Criteria	Exceedance/Notes
NA	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Υ	

Sample dilutions:

Within Criteria		Exce	edance/Notes	
	1.49x: VOCs for GRPCE-07-IA-	W)-DP	1.55x: VOCs for GRPCE-07-IA-	W)
Υ	1.50x: VOCs for GRPCE-07-IA-	N)	1.57x: VOCs for GRPCE-07-IA-	W)
	1.53x: VOCs for GRPCE-07-IA-	Common)	1.58x: VOCs for GRPCE-07-IA-	S)

Re-extraction and reanalysis:

Within Criteria	Exceedance/Notes
NA	



Second column confirmation	(GC and HPLC analy	yses only):
----------------------------	--------------------	-------------

Within Criteria	Exceedance/Notes
NA	
Internal Stan	dards:
Within Criteria	Exceedance/Notes
Υ	
Within Criteria	Exceedance/Notes
	ntitation and MDLs/RLs:
Within Criteria	Exceedance/Notes
Υ	
Tentatively id	dentified compounds:
Within Criteria	Exceedance/Notes

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	



NA

Other [specify]:

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.



GRAND RAPIDS VI ER ANALYTICAL RESULTS SUMMARY ALS ENVIRONMENTAL REPORT NO. P1605832

Samp_No		Analyte	Result Lab_Qualifier	Result_Units	MDL	RL	Val_Result Val_Qualifier
GRPCE-06-IA	W)	cis-1,2-Dichloroethene	0.039 U	ppbV	0.036	0.039	0.039 U
GRPCE-06-IA	W)	Tetrachloroethene	0.025	ppbV	0.016	0.023	0.025
GRPCE-06-IA	W)	trans-1,2-Dichloroethene	0.039 U	ppbV	0.036	0.039	0.039 U
GRPCE-06-IA	W)	Trichloroethene (TCE)	0.029 U	ppbV	0.026	0.029	0.029 UJ
GRPCE-06-IA	W)	Vinyl Chloride	0.061 U	ppbV	0.058	0.061	0.061 U
GRPCE-06-IA	W)	cis-1,2-Dichloroethene	0.16 U	ug/m3	0.14	0.16	0.16 U
GRPCE-06-IA	W)	Tetrachloroethene	0.17	ug/m3	0.11	0.16	0.17
GRPCE-06-IA	W)	trans-1,2-Dichloroethene	0.16 U	ug/m3	0.14	0.16	0.16 U
GRPCE-06-IA	W)	Trichloroethene (TCE)	0.16 U	ug/m3	0.14	0.16	0.16 UJ
GRPCE-06-IA	W)	Vinyl Chloride	0.16 U	ug/m3	0.15	0.16	0.16 U
GRPCE-07-IA	N)	cis-1,2-Dichloroethene	0.038 U	ppbV	0.035	0.038	0.038 U
GRPCE-07-IA	N)	Tetrachloroethene	0.029	ppbV	0.016	0.022	0.029
GRPCE-07-IA	N)	trans-1,2-Dichloroethene	0.038 U	ppbV	0.034	0.038	0.038 U
GRPCE-07-IA	N)	Trichloroethene (TCE)	0.028 U	ppbV	0.025	0.028	0.028 UJ
GRPCE-07-IA	N)	Vinyl Chloride	0.059 U	ppbV	0.056	0.059	0.059 U
GRPCE-07-IA	N)	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-07-IA	N)	Tetrachloroethene	0.2	ug/m3	0.11	0.15	0.2
GRPCE-07-IA	N)	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-07-IA	N)	Trichloroethene (TCE)	0.15 U	ug/m3	0.13	0.15	0.15 UJ
GRPCE-07-IA	N)	Vinyl Chloride	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-07-IA	S)	cis-1,2-Dichloroethene	0.04 U	ppbV	0.037	0.04	0.04 U
GRPCE-07-IA	S)	Tetrachloroethene	0.093	ppbV	0.017	0.023	0.093
GRPCE-07-IA	S)	trans-1,2-Dichloroethene	0.04 U	ppbV	0.036	0.04	0.04 U
GRPCE-07-IA	S)	Trichloroethene (TCE)	0.029 U	ppbV	0.026	0.029	0.029 UJ
GRPCE-07-IA	S)	Vinyl Chloride	0.062 U	ppbV	0.059	0.062	0.062 U
GRPCE-07-IA	S)	cis-1,2-Dichloroethene	0.16 U	ug/m3	0.15	0.16	0.16 U
GRPCE-07-IA	S)	Tetrachloroethene	0.63	ug/m3	0.11	0.16	0.63
GRPCE-07-IA	S)	trans-1,2-Dichloroethene	0.16 U	ug/m3	0.14	0.16	0.16 U
GRPCE-07-IA	S)	Trichloroethene (TCE)	0.16 U	ug/m3	0.14	0.16	0.16 UJ
GRPCE-07-IA	S)	Vinyl Chloride	0.16 U	ug/m3	0.15	0.16	0.16 U
GRPCE-07-IA	W)	cis-1,2-Dichloroethene	0.04 U	ppbV	0.036	0.04	0.04 U
GRPCE-07-IA	W)	Tetrachloroethene	0.074	ppbV	0.017	0.023	0.074
GRPCE-07-IA	W)	trans-1,2-Dichloroethene	0.04 U	ppbV	0.036	0.04	0.04 U
GRPCE-07-IA	W)	Trichloroethene (TCE)	0.029 U	ppbV	0.026	0.029	0.029 UJ

Samp_No		Analyte	Result Lab_Qualifier	Result_Units	MDL	RL	Val_Result Val_Qualifier
GRPCE-07-IA-	W)	Vinyl Chloride	0.061 U	ppbV	0.058	0.061	0.061 U
GRPCE-07-IA-	W)	cis-1,2-Dichloroethene	0.16 U	ug/m3	0.14	0.16	0.16 U
GRPCE-07-IA-	W)	Tetrachloroethene	0.5	ug/m3	0.11	0.16	0.5
GRPCE-07-IA-	W)	trans-1,2-Dichloroethene	0.16 U	ug/m3	0.14	0.16	0.16 U
GRPCE-07-IA-	W)	Trichloroethene (TCE)	0.16 U	ug/m3	0.14	0.16	0.16 UJ
GRPCE-07-IA-	W)	Vinyl Chloride	0.16 U	ug/m3	0.15	0.16	0.16 U
GRPCE-07-IA-	W)-DP	cis-1,2-Dichloroethene	0.038 U	ppbV	0.035	0.038	0.038 U
GRPCE-07-IA-	W)-DP	Tetrachloroethene	0.072	ppbV	0.016	0.022	0.072
GRPCE-07-IA-	W)-DP	trans-1,2-Dichloroethene	0.038 U	ppbV	0.034	0.038	0.038 U
GRPCE-07-IA-	W)-DP	Trichloroethene (TCE)	0.028 U	ppbV	0.025	0.028	0.028 UJ
GRPCE-07-IA-	W)-DP	Vinyl Chloride	0.058 U	ppbV	0.055	0.058	0.058 U
GRPCE-07-IA-	W)-DP	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-07-IA-	W)-DP	Tetrachloroethene	0.49	ug/m3	0.11	0.15	0.49
GRPCE-07-IA-	W)-DP	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-07-IA-	W)-DP	Trichloroethene (TCE)	0.15 U	ug/m3	0.13	0.15	0.15 UJ
GRPCE-07-IA-	W)-DP	Vinyl Chloride	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-07-IA-	Common)	cis-1,2-Dichloroethene	0.039 U	ppbV	0.036	0.039	0.039 U
GRPCE-07-IA-	Common)	Tetrachloroethene	0.027	ppbV	0.016	0.023	0.027
GRPCE-07-IA-	Common)	trans-1,2-Dichloroethene	0.039 U	ppbV	0.035	0.039	0.039 U
GRPCE-07-IA-	Common)	Trichloroethene (TCE)	0.028 U	ppbV	0.025	0.028	0.028 UJ
GRPCE-07-IA-	Common)	Vinyl Chloride	0.06 U	ppbV	0.057	0.06	0.06 U
GRPCE-07-IA-	Common)	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-07-IA-	Common)	Tetrachloroethene	0.18	ug/m3	0.11	0.15	0.18
GRPCE-07-IA-	Common)	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-07-IA-	Common)	Trichloroethene (TCE)	0.15 U	ug/m3	0.14	0.15	0.15 UJ
GRPCE-07-IA-	Common)	Vinyl Chloride	0.15 U	ug/m3	0.15	0.15	0.15 U



January 31, 2017

Betsy Nightingale On-Scene Coordinator U.S. Environmental Protection Agency Region 5 9311 Groh Road Grosse Ile, MI 48138-1697

Subject: Data Validation Reports

Grand Rapids VI ER

EPA Contract No. EP-S5-13-01

Technical Direction Document No. S05-0001-1605-010

Document Tracking No. 1466

Dear Ms. Nightingale:

Tetra Tech, Inc. (Tetra Tech) is submitting these Data Validation Reports for 31 air samples (including three field duplicates) collected at the Grand Rapids VI ER site. The samples were collected from January 17 through 20, 2017 and were analyzed for volatile organic compounds by ALS Environmental Laboratories and Bureau Veritas Laboratories. Tetra Tech received the last of the final data on January 30, 2017.

Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines* (NFG) for Superfund Organic Methods Data Review (August 2014).

No rejection or qualification of results was required for these data sets. The data is usable as reported by the laboratory.

If you have any questions regarding these Data Validation Reports, please call me at (662) 681-5727.

Sincerely,

Jessica A. Vickers START Chemist

Enclosure

cc: Kevin Scott, Tetra Tech Program Manager

Michael Browning, Tetra Tech Project Manager

TDD File

Jesaca a Vickers

ATTACHMENT 1

DATA VALIDATION REPORTS ALS ENVIRONMENTAL SDG P1700274 BUREAU VERITAS SDG 17010564

Site Name	Grand Rapids VI ER	TDD No.	S05-0001-1605-010
Document Tracking No.	1466A	TOD NO.	303-0001-1003-010
Data Reviewer (signature and date)	Jeraca A. Vickers January 31, 2017	Technical Reviewer (signature and date)	Hang N. Ellis III
Laboratory Report No.	P1700274	Laboratory	ALS Laboratories/Simi Valley, CA
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15	
Samples and Matrix	23 air samples (including two field duplicat	es)	
Field Duplicate Pairs	GRPCE-01-IA- (HVAC Basement)/GRPCE-01-IA- (HVAC Basement)-DP and GRPCE-02-SS- GRPCE-02-SS- DP		
Field Blanks	None		

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Y	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrument Performance Checks:	
Within	Exceedance/Notes
Criteria	Laceedance/ Notes
Υ	
Initial Calibration.	
Initial Calibration:	
Within	Exceedance/Notes
Criteria	
Y	
Continuing Calibration:	
Within	
Criteria	Exceedance/Notes
Υ	
Calibration Verification:	
Within	Exceedance/Notes
Criteria	Exceedance/Notes
Y	
Method blanks:	
Within	Evenadores /Notes
Criteria	Exceedance/Notes
Y	
Field blanks:	
Within	F

Exceedance/Notes



Criteria NA

Interference	Check Sam	ples (ICS)	(ICP	metals only	/):
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Within Criteria	Exceedance/Notes
NA	
	ring compounds (surrogates and labeled compounds):
ystem monito Within Criteria	ring compounds (surrogates and labeled compounds): Exceedance/Notes

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within	Evenedance/Notes
Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	



Field duplicates:

Within Criteria	Exceedance/Notes
Υ	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Υ	



Sample dilutions:

Within Criteria	Exceedance/Notes
	1.34x: VOCs except tetrachloroethene for GRPCE-02-SS-
	1.37x: VOCs for GRPCE-01-IA- (Basement)
	1.38x: VOCs except tetrachloroethene for GRPCE-01-SS-
	1.43x: VOCs for GRPCE-02-IA- (HBI)
	1.45x: VOCs for GRPCE-02-IA- (West Dining Hall) and GRPCE-02-OA-
	1.46x: VOCs except tetrachloroethene for GRPCE-02-SS-
	1.47x: VOCs except tetrachloroethene for GRPCE-02-SS-
	1.47x: VOCs for GRPCE-02-SS- (HBI)
	1.49x: VOCs for GRPCE-01-IA- (HVAC Basement)-DP and GRPCE-01-IA- (Basement)
	1.50x: VOCs for GRPCE-01-IA- (Main)
	1.51x: VOCs except tetrachloroethene for GRPCE-02-SS-
	1.52x: VOCs for GRPCE-01-IA- (HVAC Basement)
Υ	1.53x: VOCs for GRPCE-02-IA-
	1.55x: VOCs for GRPCE-01-IA- (Main), GRPCE-01-SS- (HVAC Basement), and GRPCE-07-IA-
	1.85x: VOCs for GRPCE-02-IA-
	2.09x: VOCs except tetrachloroethene for GRPCE-02-SS-
	2.60x: VOCs except tetrachloroethene for GRPCE-02-SS-
	2.68x: tetrachloroethene for GRPCE-02-SS-
	2.76x: tetrachloroethene for GRPCE-01-SS-
	2.94x: tetrachloroethene for GRPCE-02-SS-
	2.98x: tetrachloroethene for GRPCE-02-SS-
	5.21x: tetrachloroethene for GRPCE-02-SS-
	6.39x: tetrachloroethene for GRPCE-02-SS-
	20.0x: tetrachloroethene for GRPCE-02-SS-
	33.6x: tetrachloroethene for GRPCE-02-SS-



Re-extraction	and	reanal	ysis:
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Within Criteria	Exceedance/Notes
NA	

Second column confirmation (GC and HPLC analyses only):

Within Criteria	Fyreedance/Notes
NA	

Internal Standards:

Within Criteria	Exceedance/Notes
Υ	

Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	All results were either non-detect or above RL.

Tentatively identified compounds:

	,
Within	Evenedance/Notes
Criteria	Exceedance/Notes
NA	



System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

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.



Samp_No		Analyte	Result Lab_Qualifier	Result_Units	MDL RL	Val_Result Val_Qualifier
GRPCE-01-IA-	(HVAC Basement)	cis-1,2-Dichloroethene	0.038 U	ppbV	0.035 0.038	0.038 U
GRPCE-01-IA-	(HVAC Basement)	Tetrachloroethene	0.25	ppbV	0.016 0.022	0.25
GRPCE-01-IA-	(HVAC Basement)	trans-1,2-Dichloroethene	0.038 U	ppbV	0.035 0.038	0.038 U
GRPCE-01-IA-	(HVAC Basement)	Trichloroethene (TCE)	0.028 U	ppbV	0.025 0.028	0.028 U
GRPCE-01-IA-	(HVAC Basement)	Vinyl Chloride	0.059 U	ppbV	0.057 0.059	0.059 U
GRPCE-01-IA-	(HVAC Basement)	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14 0.15	0.15 U
GRPCE-01-IA-	(HVAC Basement)	Tetrachloroethene	1.7	ug/m3	0.11 0.15	1.7
GRPCE-01-IA-	(HVAC Basement)	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.14 0.15	0.15 U
GRPCE-01-IA-	(HVAC Basement)	Trichloroethene (TCE)	0.15 U	ug/m3	0.14 0.15	0.15 U
GRPCE-01-IA-	(HVAC Basement)	Vinyl Chloride	0.15 U	ug/m3	0.14 0.15	0.15 U
GRPCE-01-IA-	(HVAC Basement) -DP	cis-1,2-Dichloroethene	0.038 U	ppbV	0.035 0.038	0.038 U
GRPCE-01-IA-	(HVAC Basement) -DP	Tetrachloroethene	0.24	ppbV	0.016 0.022	0.24
GRPCE-01-IA-	(HVAC Basement) -DP	trans-1,2-Dichloroethene	0.038 U	ppbV	0.034 0.038	0.038 U
GRPCE-01-IA-	(HVAC Basement) -DP	Trichloroethene (TCE)	0.028 U	ppbV	0.025 0.028	0.028 U
GRPCE-01-IA-	(HVAC Basement) -DP	Vinyl Chloride	0.058 U	ppbV	0.055 0.058	0.058 U
GRPCE-01-IA-	(HVAC Basement) -DP	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14 0.15	0.15 U
GRPCE-01-IA-	(HVAC Basement) -DP	Tetrachloroethene	1.6	ug/m3	0.11 0.15	1.6
GRPCE-01-IA-	(HVAC Basement) -DP	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.14 0.15	0.15 U
GRPCE-01-IA-	(HVAC Basement) -DP	Trichloroethene (TCE)	0.15 U	ug/m3	0.13 0.15	0.15 U
GRPCE-01-IA-	(HVAC Basement) -DP	Vinyl Chloride	0.15 U	ug/m3	0.14 0.15	0.15 U
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.038 U	ppbV	0.035 0.038	0.038 U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	0.062	ppbV	0.016 0.022	0.062
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.038 U	ppbV	0.034 0.038	0.038 U
GRPCE-01-IA-	(Basement)	Trichloroethene (TCE)	0.028 U	ppbV	0.025 0.028	0.028 U
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.058 U	ppbV	0.055 0.058	0.058 U
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14 0.15	0.15 U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	0.42	ug/m3	0.11 0.15	0.42
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.14 0.15	0.15 U
GRPCE-01-IA-	(Basement)	Trichloroethene (TCE)	0.15 U	ug/m3	0.13 0.15	0.15 U
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.15 U	ug/m3	0.14 0.15	0.15 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.039 U	ppbV	0.036 0.039	0.039 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	0.047	ppbV	0.016 0.023	0.047
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.039 U	ppbV	0.036 0.039	0.039 U

Samp_No		Analyte	Result Lab_Qualifier	Result_Units	MDL RL	Val_Result Val_Qualifier
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.029 U	ppbV	0.026 0.029	0.029 U
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.061 U	ppbV	0.058 0.061	0.061 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.16 U	ug/m3	0.14 0.16	0.16 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	0.32	ug/m3	0.11 0.16	0.32
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.16 U	ug/m3	0.14 0.16	0.16 U
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.16 U	ug/m3	0.14 0.16	0.16 U
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.16 U	ug/m3	0.15 0.16	0.16 U
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.035 U	ppbV	0.032 0.035	0.035 U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	0.098	ppbV	0.015 0.02	0.098
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.035 U	ppbV	0.031 0.035	0.035 U
GRPCE-01-IA-	(Basement)	Trichloroethene (TCE)	0.026 U	ppbV	0.023 0.026	0.026 U
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.054 U	ppbV	0.051 0.054	0.054 U
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.14 U	ug/m3	0.13 0.14	0.14 U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	0.66	ug/m3	0.099 0.14	0.66
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.14 U	ug/m3	0.12 0.14	0.14 U
GRPCE-01-IA-	(Basement)	Trichloroethene (TCE)	0.14 U	ug/m3	0.12 0.14	0.14 U
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.14 U	ug/m3	0.13 0.14	0.14 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.038 U	ppbV	0.035 0.038	0.038 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	0.093	ppbV	0.016 0.022	0.093
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.038 U	ppbV	0.034 0.038	0.038 U
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.028 U	ppbV	0.025 0.028	0.028 U
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.059 U	ppbV	0.056 0.059	0.059 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14 0.15	0.15 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	0.63	ug/m3	0.11 0.15	0.63
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.14 0.15	0.15 U
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.15 U	ug/m3	0.13 0.15	0.15 U
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.15 U	ug/m3	0.14 0.15	0.15 U
GRPCE-01-SS-	(HVAC Basement)	cis-1,2-Dichloroethene	0.039 U	ppbV	0.036 0.039	0.039 U
GRPCE-01-SS-	(HVAC Basement)	Tetrachloroethene	4.5	ppbV	0.016 0.023	4.5
GRPCE-01-SS-	(HVAC Basement)	trans-1,2-Dichloroethene	0.039 U	ppbV	0.036 0.039	0.039 U
GRPCE-01-SS-	(HVAC Basement)	Trichloroethene (TCE)	0.07	ppbV	0.026 0.029	0.07
GRPCE-01-SS-	(HVAC Basement)	Vinyl Chloride	0.061 U	ppbV	0.058 0.061	0.061 U
GRPCE-01-SS-	(HVAC Basement)	cis-1,2-Dichloroethene	0.16 U	ug/m3	0.14 0.16	0.16 U

Samp_No		Analyte	Result Lab_Qualifier	Result_Units	MDL	RL	Val_Result	Val_Qualifier
GRPCE-01-SS-	(HVAC Basement)	Tetrachloroethene	31	ug/m3	0.11	0.16	31	
GRPCE-01-SS-	(HVAC Basement)	trans-1,2-Dichloroethene	0.16 U	ug/m3	0.14	0.16	0.16	U
GRPCE-01-SS-	(HVAC Basement)	Trichloroethene (TCE)	0.37	ug/m3	0.14	0.16	0.37	
GRPCE-01-SS-	(HVAC Basement)	Vinyl Chloride	0.16 U	ug/m3	0.15	0.16	0.16	U
GRPCE-01-SS-		cis-1,2-Dichloroethene	0.035 U	ppbV	0.032	0.035	0.035	U
GRPCE-01-SS-		Tetrachloroethene	30 D	ppbV	0.029	0.041	30	
GRPCE-01-SS-		trans-1,2-Dichloroethene	0.035 U	ppbV	0.032	0.035	0.035	U
GRPCE-01-SS-		Trichloroethene (TCE)	0.3	ppbV	0.023	0.026	0.3	
GRPCE-01-SS-		Vinyl Chloride	0.054 U	ppbV	0.051	0.054	0.054	U
GRPCE-01-SS-		cis-1,2-Dichloroethene	0.14 U	ug/m3	0.13	0.14	0.14	U
GRPCE-01-SS-		Tetrachloroethene	210 D	ug/m3	0.2	0.28	210	
GRPCE-01-SS-		trans-1,2-Dichloroethene	0.14 U	ug/m3	0.13	0.14	0.14	U
GRPCE-01-SS-		Trichloroethene (TCE)	1.6	ug/m3	0.12	0.14	1.6	
GRPCE-01-SS-		Vinyl Chloride	0.14 U	ug/m3	0.13	0.14	0.14	U
GRPCE-02-IA-		cis-1,2-Dichloroethene	0.047 U	ppbV	0.043	0.047	0.047	U
GRPCE-02-IA-		Tetrachloroethene	0.51	ppbV	0.02	0.027	0.51	
GRPCE-02-IA-		trans-1,2-Dichloroethene	0.047 U	ppbV	0.042	0.047	0.047	U
GRPCE-02-IA-		Trichloroethene (TCE)	0.034 U	ppbV	0.031	0.034	0.034	U
GRPCE-02-IA-		Vinyl Chloride	0.072 U	ppbV	0.069	0.072	0.072	U
GRPCE-02-IA-		cis-1,2-Dichloroethene	0.19 U	ug/m3	0.17	0.19	0.19	U
GRPCE-02-IA-		Tetrachloroethene	3.4	ug/m3	0.13	0.19	3.4	
GRPCE-02-IA-		trans-1,2-Dichloroethene	0.19 U	ug/m3	0.17	0.19	0.19	U
GRPCE-02-IA-		Trichloroethene (TCE)	0.19 U	ug/m3	0.16	0.19	0.19	U
GRPCE-02-IA-		Vinyl Chloride	0.19 U	ug/m3	0.18	0.19	0.19	U
GRPCE-02-IA-	(HBI)	cis-1,2-Dichloroethene	0.036 U	ppbV	0.033	0.036	0.036	U
GRPCE-02-IA-	(HBI)	Tetrachloroethene	0.023	ppbV	0.015	0.021	0.023	
GRPCE-02-IA-	(HBI)	trans-1,2-Dichloroethene	0.036 U	ppbV	0.033	0.036	0.036	U
GRPCE-02-IA-	(HBI)	Trichloroethene (TCE)	0.057	ppbV	0.024	0.027	0.057	
GRPCE-02-IA-	(HBI)	Vinyl Chloride	0.056 U	ppbV	0.053	0.056	0.056	U
GRPCE-02-IA-	(HBI)	cis-1,2-Dichloroethene	0.14 U	ug/m3	0.13	0.14	0.14	U
GRPCE-02-IA-	(HBI)	Tetrachloroethene	0.16	ug/m3	0.1	0.14	0.16	
GRPCE-02-IA-	(HBI)	trans-1,2-Dichloroethene	0.14 U	ug/m3	0.13	0.14	0.14	U
GRPCE-02-IA-	(HBI)	Trichloroethene (TCE)	0.31	ug/m3	0.13	0.14	0.31	

Samp_No	A	Analyte	Result	Lab_Qualifier	Result_Units	MDL	RL	Val_Result	Val_Qualifier
GRPCE-02-IA-	\	Vinyl Chloride	0.14	U	ug/m3	0.14	0.14	0.14	U
GRPCE-02-IA- (West	t Dining Hall)	cis-1,2-Dichloroethene	0.037	U	ppbV	0.034	0.037	0.037	U
GRPCE-02-IA- (West	t Dining Hall)	Tetrachloroethene	0.045		ppbV	0.015	0.021	0.045	
GRPCE-02-IA- (West	t Dining Hall) t	rans-1,2-Dichloroethene	0.037	U	ppbV	0.033	0.037	0.037	U
GRPCE-02-IA- (West	t Dining Hall)	Trichloroethene (TCE)	0.027	U	ppbV	0.024	0.027	0.027	U
GRPCE-02-IA- (West	t Dining Hall) \	Vinyl Chloride	0.057	U	ppbV	0.054	0.057	0.057	U
GRPCE-02-IA- (West	t Dining Hall)	cis-1,2-Dichloroethene	0.15	U	ug/m3	0.13	0.15	0.15	U
GRPCE-02-IA- (West	t Dining Hall)	Tetrachloroethene	0.3		ug/m3	0.1	0.15	0.3	
GRPCE-02-IA- (West	t Dining Hall) t	rans-1,2-Dichloroethene	0.15	U	ug/m3	0.13	0.15	0.15	U
GRPCE-02-IA- (West	t Dining Hall)	Trichloroethene (TCE)	0.15	U	ug/m3	0.13	0.15	0.15	U
GRPCE-02-IA-	t Dining Hall) \	Vinyl Chloride	0.15	U	ug/m3	0.14	0.15	0.15	U
GRPCE-02-IA-	(cis-1,2-Dichloroethene	0.039	U	ppbV	0.036	0.039	0.039	U
GRPCE-02-IA-	1	Tetrachloroethene	0.28		ppbV	0.016	0.023	0.28	
GRPCE-02-IA-	t	rans-1,2-Dichloroethene	0.039	U	ppbV	0.035	0.039	0.039	U
GRPCE-02-IA-	7	Trichloroethene (TCE)	0.075		ppbV	0.025	0.028	0.075	
GRPCE-02-IA-	\	Vinyl Chloride	0.06	U	ppbV	0.057	0.06	0.06	U
GRPCE-02-IA-	(cis-1,2-Dichloroethene	0.15	U	ug/m3	0.14	0.15	0.15	U
GRPCE-02-IA-	7	Tetrachloroethene	1.9		ug/m3	0.11	0.15	1.9	
GRPCE-02-IA-	t	rans-1,2-Dichloroethene	0.15	U	ug/m3	0.14	0.15	0.15	U
GRPCE-02-IA-	7	Trichloroethene (TCE)	0.4		ug/m3	0.14	0.15	0.4	
GRPCE-02-IA-	\	Vinyl Chloride	0.15	U	ug/m3	0.15	0.15	0.15	U
GRPCE-02-OA-	(cis-1,2-Dichloroethene	0.037	U	ppbV	0.034	0.037	0.037	U
GRPCE-02-OA-	1	Tetrachloroethene	0.021	U	ppbV	0.015	0.021	0.021	U
GRPCE-02-OA-	t	rans-1,2-Dichloroethene	0.037	U	ppbV	0.033	0.037	0.037	U
GRPCE-02-OA-	7	Trichloroethene (TCE)	0.033		ppbV	0.024	0.027	0.033	
GRPCE-02-OA-	\	Vinyl Chloride	0.057	U	ppbV	0.054	0.057	0.057	U
GRPCE-02-OA-	(cis-1,2-Dichloroethene	0.15	U	ug/m3	0.13	0.15	0.15	U
GRPCE-02-OA-	7	Tetrachloroethene	0.15	U	ug/m3	0.1	0.15	0.15	U
GRPCE-02-OA-	t	rans-1,2-Dichloroethene	0.15	U	ug/m3	0.13	0.15	0.15	U
GRPCE-02-OA-	7	Trichloroethene (TCE)	0.18		ug/m3	0.13	0.15	0.18	
GRPCE-02-OA-		Vinyl Chloride	0.15	U	ug/m3	0.14	0.15	0.15	U
GRPCE-02-SS-	(cis-1,2-Dichloroethene	0.037	U	ppbV	0.034	0.037	0.037	U
GRPCE-02-SS-	1	Tetrachloroethene	16		ppbV	0.016	0.022	16	

Samp_No	Analyte	Result Lab_Qualifier	Result_Units	MDL RL	Val_Result Val_Qualifier
GRPCE-02-SS-	trans-1,2-Dichloroethene	0.037 U	ppbV	0.034 0.037	0.037 U
GRPCE-02-SS-	Trichloroethene (TCE)	0.027 U	ppbV	0.024 0.027	0.027 U
GRPCE-02-SS-	Vinyl Chloride	0.058 U	ppbV	0.055 0.058	0.058 U
GRPCE-02-SS-	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14 0.15	0.15 U
GRPCE-02-SS-	Tetrachloroethene	110	ug/m3	0.11 0.15	110
GRPCE-02-SS-	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.13 0.15	0.15 U
GRPCE-02-SS-	Trichloroethene (TCE)	0.15 U	ug/m3	0.13 0.15	0.15 U
GRPCE-02-SS-	Vinyl Chloride	0.15 U	ug/m3	0.14 0.15	0.15 U
GRPCE-02-SS- (HBI)	cis-1,2-Dichloroethene	0.037 U	ppbV	0.034 0.037	0.037 U
GRPCE-02-SS- (HBI)	Tetrachloroethene	12	ppbV	0.016 0.022	12
GRPCE-02-SS- (HBI)	trans-1,2-Dichloroethene	0.037 U	ppbV	0.034 0.037	0.037 U
GRPCE-02-SS- (HBI)	Trichloroethene (TCE)	0.027 U	ppbV	0.024 0.027	0.027 U
GRPCE-02-SS- (HBI)	Vinyl Chloride	0.058 U	ppbV	0.055 0.058	0.058 U
GRPCE-02-SS- (HBI)	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14 0.15	0.15 U
GRPCE-02-SS- (HBI)	Tetrachloroethene	83	ug/m3	0.11 0.15	83
GRPCE-02-SS- (HBI)	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.13 0.15	0.15 U
GRPCE-02-SS- (HBI)	Trichloroethene (TCE)	0.15 U	ug/m3	0.13 0.15	0.15 U
GRPCE-02-SS- (HBI)	Vinyl Chloride	0.15 U	ug/m3	0.14 0.15	0.15 U
GRPCE-02-SS-	cis-1,2-Dichloroethene	0.037 U	ppbV	0.034 0.037	0.037 U
GRPCE-02-SS-	Tetrachloroethene	84 D	ppbV	0.068 0.094	84
GRPCE-02-SS-	trans-1,2-Dichloroethene	0.037 U	ppbV	0.034 0.037	0.037 U
GRPCE-02-SS-	Trichloroethene (TCE)	0.037	ppbV	0.024 0.027	0.037
GRPCE-02-SS-	Vinyl Chloride	0.058 U	ppbV	0.055 0.058	0.058 U
GRPCE-02-SS-	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14 0.15	0.15 U
GRPCE-02-SS-	Tetrachloroethene	570 D	ug/m3	0.46 0.64	570
GRPCE-02-SS-	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.13 0.15	0.15 U
GRPCE-02-SS-	Trichloroethene (TCE)	0.2	ug/m3	0.13 0.15	0.2
GRPCE-02-SS-	Vinyl Chloride	0.15 U	ug/m3	0.14 0.15	0.15 U
GRPCE-02-SS-	cis-1,2-Dichloroethene	0.034 U	ppbV	0.031 0.034	0.034 U
GRPCE-02-SS-	Tetrachloroethene	34 D	ppbV	0.028 0.04	34
GRPCE-02-SS-	trans-1,2-Dichloroethene	0.034 U	ppbV	0.031 0.034	0.034 U
GRPCE-02-SS-	Trichloroethene (TCE)	0.14	ppbV	0.022 0.025	0.14
GRPCE-02-SS-	Vinyl Chloride	0.052 U	ppbV	0.05 0.052	0.052 U

Samp_No		Analyte	Result Lab_Qualifier	Result_Units	MDL RL	Val_Result Val_Qualifier
GRPCE-02-SS-		cis-1,2-Dichloroethene	0.13 U	ug/m3	0.12 0.	13 0.13 U
GRPCE-02-SS-		Tetrachloroethene	230 D	ug/m3	0.19 0.	27 230
GRPCE-02-SS-		trans-1,2-Dichloroethene	0.13 U	ug/m3	0.12 0.	13 0.13 U
GRPCE-02-SS-		Trichloroethene (TCE)	0.77	ug/m3	0.12 0.	13 0.77
GRPCE-02-SS-		Vinyl Chloride	0.13 U	ug/m3	0.13 0	13 0.13 U
GRPCE-02-SS-	DP	cis-1,2-Dichloroethene	0.037 U	ppbV	0.034 0.0	37 0.037 U
GRPCE-02-SS-	DP	Tetrachloroethene	34 D	ppbV	0.031 0.0	43 34
GRPCE-02-SS-	DP	trans-1,2-Dichloroethene	0.037 U	ppbV	0.034 0.0	37 0.037 U
GRPCE-02-SS-	DP	Trichloroethene (TCE)	0.15	ppbV	0.024 0.0	27 0.15
GRPCE-02-SS-	DP	Vinyl Chloride	0.058 U	ppbV	0.055 0.0	58 0.058 U
GRPCE-02-SS-	DP	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14 0	15 0.15 U
GRPCE-02-SS-	DP	Tetrachloroethene	230 D	ug/m3	0.21 0	29 230
GRPCE-02-SS-	DP	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.13 0.	15 0.15 U
GRPCE-02-SS-	DP	Trichloroethene (TCE)	0.83	ug/m3	0.13 0	15 0.83
GRPCE-02-SS-	DP	Vinyl Chloride	0.15 U	ug/m3	0.14 0	15 0.15 U
GRPCE-02-SS-		cis-1,2-Dichloroethene	0.038 U	ppbV	0.035 0.0	38 0.038 U
GRPCE-02-SS-		Tetrachloroethene	370 D	ppbV	0.36).5 370
GRPCE-02-SS-		trans-1,2-Dichloroethene	0.038 U	ppbV	0.035 0.0	38 0.038 U
GRPCE-02-SS-		Trichloroethene (TCE)	0.87	ppbV	0.025 0.0	28 0.87
GRPCE-02-SS-		Vinyl Chloride	0.059 U	ppbV	0.056 0.0	59 0.059 U
GRPCE-02-SS-		cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14 0	15 0.15 U
GRPCE-02-SS-		Tetrachloroethene	2500 D	ug/m3	2.4	3.4 2500
GRPCE-02-SS-		trans-1,2-Dichloroethene	0.15 U	ug/m3	0.14 0	15 0.15 U
GRPCE-02-SS-		Trichloroethene (TCE)	4.7	ug/m3	0.13 0.	15 4.7
GRPCE-02-SS-		Vinyl Chloride	0.15 U	ug/m3	0.14 0	15 0.15 U
GRPCE-02-SS-		cis-1,2-Dichloroethene	0.066 U	ppbV	0.06 0.0	66 0.066 U
GRPCE-02-SS-		Tetrachloroethene	77 D	ppbV	0.21	0.3 77
GRPCE-02-SS-		trans-1,2-Dichloroethene	0.066 U	ppbV	0.06 0.0	66 0.066 U
GRPCE-02-SS-		Trichloroethene (TCE)	0.048 U	ppbV	0.043 0.0	48 0.048 U
GRPCE-02-SS-		Vinyl Chloride	0.1 U	ppbV	0.097	0.1 U
GRPCE-02-SS-		cis-1,2-Dichloroethene	0.26 U	ug/m3	0.24 0.	26 0.26 U
GRPCE-02-SS-		Tetrachloroethene	520 D	ug/m3	1.4	2 520
GRPCE-02-SS-		trans-1,2-Dichloroethene	0.26 U	ug/m3	0.24 0	26 0.26 U

Samp_No	Analyte	Result Lab_Qualifier	Result_Units	MDL	RL	Val_Result Val_Qualifier
GRPCE-02-SS-	Trichloroethene (TCE)	0.26 U	ug/m3	0.23	0.26	0.26 U
GRPCE-02-SS-	Vinyl Chloride	0.26 U	ug/m3	0.25	0.26	0.26 U
GRPCE-02-SS-	cis-1,2-Dichloroethene	0.053 U	ppbV	0.048	0.053	0.053 U
GRPCE-02-SS-	Tetrachloroethene	41 D	ppbV	0.032	0.044	41
GRPCE-02-SS-	trans-1,2-Dichloroethene	0.053 U	ppbV	0.048	0.053	0.053 U
GRPCE-02-SS-	Trichloroethene (TCE)	0.048	ppbV	0.035	0.039	0.048
GRPCE-02-SS-	Vinyl Chloride	0.082 U	ppbV	0.078	0.082	0.082 U
GRPCE-02-SS-	cis-1,2-Dichloroethene	0.21 U	ug/m3	0.19	0.21	0.21 U
GRPCE-02-SS-	Tetrachloroethene	280 D	ug/m3	0.21	0.3	280
GRPCE-02-SS-	trans-1,2-Dichloroethene	0.21 U	ug/m3	0.19	0.21	0.21 U
GRPCE-02-SS-	Trichloroethene (TCE)	0.26	ug/m3	0.19	0.21	0.26
GRPCE-02-SS-	Vinyl Chloride	0.21 U	ug/m3	0.2	0.21	0.21 U
GRPCE-02-SS-	cis-1,2-Dichloroethene	0.037 U	ppbV	0.034	0.037	0.037 U
GRPCE-02-SS-	Tetrachloroethene	60 D	ppbV	0.055	0.077	60
GRPCE-02-SS-	trans-1,2-Dichloroethene	0.037 U	ppbV	0.034	0.037	0.037 U
GRPCE-02-SS-	Trichloroethene (TCE)	0.18	ppbV	0.024	0.027	0.18
GRPCE-02-SS-	Vinyl Chloride	0.057 U	ppbV	0.054	0.057	0.057 U
GRPCE-02-SS-	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.13	0.15	0.15 U
GRPCE-02-SS-	Tetrachloroethene	410 D	ug/m3	0.38	0.52	410
GRPCE-02-SS-	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.13	0.15	0.15 U
GRPCE-02-SS-	Trichloroethene (TCE)	0.96	ug/m3	0.13	0.15	0.96
GRPCE-02-SS-	Vinyl Chloride	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-07-IA-	cis-1,2-Dichloroethene	0.039 U	ppbV	0.036	0.039	0.039 U
GRPCE-07-IA-	Tetrachloroethene	0.043	ppbV	0.016	0.023	0.043
GRPCE-07-IA-	trans-1,2-Dichloroethene	0.039 U	ppbV	0.036	0.039	0.039 U
GRPCE-07-IA-	Trichloroethene (TCE)	0.029 U	ppbV	0.026	0.029	0.029 U
GRPCE-07-IA-	Vinyl Chloride	0.061 U	ppbV	0.058	0.061	0.061 U
GRPCE-07-IA-	cis-1,2-Dichloroethene	0.16 U	ug/m3	0.14	0.16	0.16 U
GRPCE-07-IA-	Tetrachloroethene	0.29	ug/m3	0.11	0.16	0.29
GRPCE-07-IA-	trans-1,2-Dichloroethene	0.16 U	ug/m3	0.14	0.16	0.16 U
GRPCE-07-IA-	Trichloroethene (TCE)	0.16 U	ug/m3	0.14	0.16	0.16 U
GRPCE-07-IA-	Vinyl Chloride	0.16 U	ug/m3	0.15	0.16	0.16 U

Site Name	Grand Rapids VI ER		505 0004 4505 040
Document Tracking No.	1466B	TDD No.	S05-0001-1605-010
Data Reviewer (signature and date)	January 31, 2017	Technical Reviewer (signature and date)	Hang N. Ellis III
Laboratory Report No.	17010564	Laboratory	Bureau Veritas/Novi, MI
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15	
Samples and Matrix	Eight air samples (including a field duplicate	e)	
Field Duplicate Pairs	GRPCE-44-IA-	DP	
Field Blanks	None		

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrum	nent	Performance Checks:					
With		Exceedance/Notes					
Criter	ria	Exceedance/Notes					
Υ							
Initial C	Initial Calibration:						

Initial Calibration:

Within Criteria	Exceedance/Notes
Υ	

Continuing Calibration:

Within Criteria	Exceedance/Notes
Υ	

Calibration Verification:

Within Criteria	Exceedance/Notes
NA	

Method blanks:

Within Criteria	Exceedance/Notes
Υ	

Field blanks:

Within Criteria	Exceedance/Notes
NA	



Interference Check Sam	iples (ICS)) (ICP	metals	only):
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Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	



EPA REGION 5 START CONTRACT		
Field duplicates:		
Within	Exceedance/Notes	
Criteria		
Υ		
LCSs/LCSDs:		
Within	Fuencial and Alleton	
Criteria	Exceedance/Notes	
Υ		
Sample dilutions:		
Within	Formation of Makes	
Criteria	Exceedance/Notes	
NA		
Re-extraction and reanalysis:		
Within		
Criteria	Exceedance/Notes	
NA		
Second column confirmation (GC and H	PLC analyses only):	
Within		
Criteria	Exceedance/Notes	
NA		
Internal Standards:		
Within		
Criteria	Exceedance/Notes	



Target analyte identification	Target	analy	vte i	iden	tifica	ition
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Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	The laboratory qualified results between the RL and method detection limit as estimated (J).

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

Other labe	
Within	Exceedance/Notes
Criteria	
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:

1	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.
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.





Date: 24-Jan-17

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 17010564

Sample Identification GRPCE-44-IA Lab Number:

007A

Date Sampled: 1/17/2017

Sample Type:

Air, Can

Date Received: 1/18/2017

Analysis Date: 1/20/2017

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure: Final Pressure:

-0.99 psig -0.99 psig

Canister ID:

14629

CAS#	Analyte		MDL ig/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	/0.040 丁	0.024	0.16	(0.010J	0061	0.04	1	*
127-18-4	Tetrachloroethene	0.95	0.036	0.27	0.14	.0053	0.04	1	
156-60-5	trans-1.2-Dichloroethene	8.4	0.019	0.16	2.1	0.0049	0.04	1	
79-01-6	Trichloroethene	0.054 3	0 021	0.21	0.010 3	0 0039	0.04	1	1
75-01-4	Vinyl Chloride	-CI4	0.022	0.10	دالله الم	0 0088	0.04 L)1	



^{--;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL: Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T, Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 24-Jan-17

Date Received: 1/18/2017

Analysis Date: 1/20/2017

Analyst: DRS

Client: **TETRA TECH**

GRAND RAPIDS EMERGENCY RESPONSE Project: Work Order No: 17010564

Sample Identification GRPCE-44-IA-Date Sampled: 1/17/2017

006A Lab Number:

Sample Type:

Air, Can

Test Method:

EPA Method TO-15A

Initial Pressure: Final Pressure: -2.35 psig

-2.35 psig

Canister ID	: 14008	
CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	ND 0 024 0.164 ND 0.0061 0.044 1
127-18-4	Tetrachloroethene	0.47 0 036 0.27 0.070 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	1.8 0.019 0.16 0.46 0.0049 0.04 1
79-01-6	Trichloroethene	0 054 3 0 021 0.21 0.010 3 0 0039 0.04 1
75-01-4	Vinyl Chloride	ND 0 022 (0.10u) ND 0.0088 (004 U)



^{--;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 24-Jan-17

Date Sampled: 1/17/2017

Date Received: 1/18/2017

Analysis Date: 1/20/2017

Analyst: DRS

TETRA TECH Client:

Work Order No: 17010564 Project: GRAND RAPIDS EMERGENCY RESPONSE

Sample Identification GRPCE-44-IA-

005A Lab Number:

Sample Type:

Air, Can

Test Method:

EPA Method TO-15A

Initial Pressure: Final Pressure:

-2.39 psig -2.39 psig

Canister ID:	14573		
CAS#	Analyte		RL bbV) DF Qual
156-59-2	cis-1,2-Dichloroethene	210 0.024 (6.16 U) NO 0.0061 (0	04 W 1
127-18-4	Tetrachloroethene	0.75 0.036 0.27 0.11 0.0053 0	.04
156-60-5	trans-1.2-Dichloroethene	5.5 0.019 0.16 1.4 0.0049 0	.04 1
79-01-6	Trichloroethene	0.11 3 0.021 0.21 0.020 0.0039 0	.04 1 /
75-01-4	Vinyl Chloride	ND 0.022 0.10 ND 0.0088 0	.044) 1



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 24-Jan-17

Date Received: 1/18/2017

Analysis Date: 1/20/2017

Analyst: DRS

Client: **TETRA TECH**

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 17010564

Sample Identification GRPCE-44-IA-1168(MAIN) Date Sampled: 1/17/2017

Lab Number: 003A

Sample Type: Air, Can

EPA Method TO-15A Test Method:

Initial Pressure: -2.06 psig -2.06 psig Final Pressure:

Canister ID: 14032 Results MDL RI. Results (ug/m3) (ug/m³) (ug/m³) Analyte CAS#

MDL RL (ppbV) DF Qual (ppbV) (ppbV) 156-59-2 cis-1.2-Dichloroethene 0.024 0.164 0.0061 0.04 4 0.61 0.036 0.27 0.090 0.0053 0.04 Tetrachlorocthene 127-18-4 0.019 0.16 0.0049 0.04 156-60-5 trans-1,2-Dichloroethene 5.2 1.3 0.054 3 0.021 0.010 3/0 0039 Trichloroethene 0.21 0.04 79-01-6 ND 0.022 0.10 ND 0 0088 0:044 Vinyl Chloride 75-01-4



⁻ Information not available or not applicable.

ND: Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



14479

Date: 24-Jan-17

Client: TETRA TECH

Canister 1D:

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 17010564

Sample Identification GRPCE-44-IA Date Sampled: 1/17/2017

Lab Number: 004A

Date Received: 1/18/2017 Sample Type: Air, Can Analysis Date: 1/20/2017

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -2.03 psig Final Pressure: -2.03 psig

Results MDL RL Results MDL RL (ug/m3) (ug/m3) (ug/m3) (pphV) (ppbV) CAS# Analyte (ppbV) DF Qual 156-59-2 cis-1,2-Dichloroethene 0 0403 0 024 0.16 0.010J 0.0061 0.04 127-18-4 0 036 0.27 0.04 Tetrachloroethene

0 61 0.0053 0.090 0.019 0.0049 0.04 156-60-5 trans-1,2-Dichloroethene 5.3 0.16 1.3 0.020 3 0 0039 0.11 3 0.021 0.21 0.04 79-01-6 Trichloroethene 0.022 NO 0 0088 0.044 75-01-4 Vinyl Chloride



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL: Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R. RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E. Value exceeds linear range of calibration curve



Date: 24-Jan-17

Client: TETRA TECH

Project: GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 17010564

Sample Identification GRPCE-45-IA-1)

Date Sampled: 1/17/2017

Lab Number:

001A

Date Received: 1/18/2017

Sample Type:

Air, Can

Analysis Date: 1/20/2017

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-2.37 psig

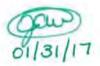
Final Pressure:

-2.37 psig

Canister ID:

14293

CAS#	Analyte		MDL ig/m³)	RL (ug/m³)	Results (ppbV)	MDL (ppbV)	RL (ppbV)	DF	Qual
156-59-2	cis-1,2-Dichloroethene	0 040 5	0 024	0.16	00105	0.0061	0.04	-1	8
127-18-4	Tetrachloroethene	0.54	0.036	0.27	0.080	0.0053	0.04	1	
156-60-5	trans-1,2-Dichloroethene	1.5	0 019	0.16	0.37	0.0049	0.04	1	
79-01-6	Trichloroethene	0.11 5	0 021	0.21	0.020 3	0 0039	0.04	1	1
75-01-4	Vinyl Chloride	ND-	0 022	0.10	NB NB	0.0088	0.04U	1	



^{-,} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 24-Jan-17

Client:

TETRA TECH

Project:

GRAND RAPIDS EMERGENCY RESPONSE

Work Order No: 17010564

Sample Identification GRPCE-45-IA-

Date Sampled: 1/17/2017

Lab Number:

002A

Date Received: 1/18/2017

Sample Type:

Air, Can

Analysis Date: 1/20/2017

Test Method:

EPA Method TO-15A

Analyst: DRS

Initial Pressure:

-2.2 psig

Final Pressure:

-2.2 psig

Canister 1D:

14461

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Q	Qual
156-59-2	cis-1,2-Dichlorocthene	ND 0.024 (0.164) AND 0.0061 (0.044) 1	
127-18-4	Tetrachlorocthene	0.41 0.036 0.27 0.060 0.0053 0.04 1	
156-60-5	trans-1,2-Dichlorocthene	2.2 0.019 0.16 0.56 0.0049 0.04 1	
79-01-6	Trichloroethenc	0.054 0 021 0.21 0.010 0.0039 0.04 1	8
75-01-4	Vinyl Chloride	ND 0.022 0.104 ND 0.0088 0.044 1	



^{-;} Information not available or not applicable.

ND; Less than the indicated limit of detection (LOD)

RL; Report Limit

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R: RPD outside accepted recovery limits

T: Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



Date: 24-Jan-17

Date Received: 1/18/2017

Client: TETRA TECH

Lab Number:

Project: GRAND RAPIDS EMERGENCY RESPONSE Work Order No: 17010564

Sample Identification GRPCE-48-OA-Date Sampled: 1/17/2017

008A

Sample Type: Air, Can Analysis Date: 1/20/2017

Test Method: EPA Method TO-15A Analyst: DRS

Initial Pressure: -2.07 psig

Final Pressure: -2.07 psig Canister ID: 14142

CAS#	Analyte	Results MDL RL Results MDL RL (ug/m³) (ug/m³) (ug/m³) (ppbV) (ppbV) (ppbV) DF Qua
156-59-2	cis-1.2-Dichloroethene	ND 0.024 (0164) ND 0 0061 (0.044) 1
127-18-4	Tetrachloroethene	0.14 3 0.036 0 27 0.020 3 0.0053 0.04 1
156-60-5	trans-1,2-Dichloroethene	ND 0.019 (0.164) ND 0.0049 (0.044)
79-01-6	Trichloroethene	0.054 J 0 021 0.21 (0.010 J 0.0039 0.04 1
75-01-4	Vinyl Chloride	0.022 (0.104) ND 0.0088 (0.044) 1



^{-;} Information not available or not applicable.

J; Value is between the MDL and Reporting Limit, estimated r

MDL; Method Detection Limit

B; Analyte detected in the associated Method Blank

S; Spike Recovery outside accepted recovery limits

R; RPD outside accepted recovery limits

T; Tentatively Identified Compound (TIC)

E; Value exceeds linear range of calibration curve



February 6, 2017

Betsy Nightingale On-Scene Coordinator U.S. Environmental Protection Agency Region 5 9311 Groh Road Grosse Ile, MI 48138-1697

Subject: Data Validation Report

Grand Rapids VI ER

EPA Contract No. EP-S5-13-01

Technical Direction Document No. S05-0001-1605-010

Document Tracking No. 1477

Dear Ms. Nightingale:

Tetra Tech, Inc. (Tetra Tech) is submitting this Data Validation Report for 25 air samples (including a field duplicate) collected at the Grand Rapids VI ER site. The samples were collected from January 25 through 27, 2017 and were analyzed for volatile organic compounds by ALS Environmental. Tetra Tech received the data on February 3, 2017.

Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines* (NFG) for Superfund Organic Methods Data Review (August 2014).

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

If you have any questions regarding this Data Validation Report, please call me at (662) 681-5727.

Sincerely,

Jessica A. Vickers START Chemist

Enclosure

cc: Kevin Scott, Tetra Tech Program Manager

Michael Browning, Tetra Tech Project Manager

TDD File

Jesaca a Vickers

ATTACHMENT 1 DATA VALIDATION REPORT

ALS SDG P1700406

Site Name	Site Name Grand Rapids VI ER		S05-0001-1605-010	
Document Tracking No.	1477	TDD No.	303-0001-1603-010	
Data Reviewer (signature and date)	Jeoaca A. Vickers February 6, 2017	Technical Reviewer (signature and date)	Hang N. Ellis III 6 February 2017	
Laboratory Report No.	P1700406	Laboratory	ALS Laboratories/Simi Valley, CA	
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15		
Samples and Matrix 25 air samples (including a field duplicate)				
Field Duplicate Pairs	GRPCE-01-IA- (Main)/GRPCE	-01-IA- (Ma	in)-DP	
Field Blanks None				

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrument Performance Checks:

Within Criteria	Exceedance/Notes
Υ	

Initial Calibration:

Within Criteria	Exceedance/Notes
Υ	

Continuing Calibration:

Within Criteria	Exceedance/Notes
Y	

Calibration Verification:

Within Criteria	Exceedance/Notes
Υ	

Method blanks:

Within Criteria	Exceedance/Notes
Υ	

Field blanks:

Within Criteria	Exceedance/Notes
NA	



Interference Check Sam	iples (ICS)) (ICP	metals	only):
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Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Y	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within	Evenadores /Notes	Exceedance/Notes
Criteria		Exceedance/ Notes
NA		

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
Y	



Field duplicates:

Within Criteria	Exceedance/Notes					
Υ						

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Υ	



Sample dilutions:





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					
Υ						

Target analyte identification:

Within Criteria	Exceedance/Notes				
Υ					

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	All results were either non-detect or above RL.

Tentatively identified compounds:

Within	Exceedance/Notes
Criteria	Exceedance/ Notes
NA	



System performance and instrument stability:

Within Criteria	Exceedance/Notes					
Y						

Other [specify]:

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.



Samp_No		Analyte	Result Lab_Qualifier	Result_Units	MDL	RL	Val_Result Val_Qualifier
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.038 U	ppbV	0.035	0.038	0.038 U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	0.21	ppbV	0.016	0.022	0.21
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.038 U	ppbV	0.035	0.038	0.038 U
GRPCE-01-IA-	(Basement)	Trichloroethene (TCE)	0.028 U	ppbV	0.025	0.028	0.028 U
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.059 U	ppbV	0.056	0.059	0.059 U
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	1.4	ug/m3	0.11	0.15	1.4
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-01-IA-	(Basement)	Trichloroethene (TCE)	0.15 U	ug/m3	0.13	0.15	0.15 U
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.039 U	ppbV	0.036	0.039	0.039 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	1.1	ppbV	0.016	0.023	1.1
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.039 U	ppbV	0.035	0.039	0.039 U
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.028 U	ppbV	0.025	0.028	0.028 U
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.06 U	ppbV	0.057	0.06	0.06 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	7.7	ug/m3	0.11	0.15	7.7
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.15 U	ug/m3	0.15	0.15	0.15 U
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.04 U	ppbV	0.037	0.04	0.04 U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	0.023 U	ppbV	0.017	0.023	0.023 U
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.04 U	ppbV	0.036	0.04	0.04 U
GRPCE-01-IA-	(Basement)	Trichloroethene (TCE)	0.029 U	ppbV	0.026	0.029	0.029 U
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.062 U	ppbV	0.059	0.062	0.062 U
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.16 U	ug/m3	0.15	0.16	0.16 U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	0.16 U	ug/m3	0.11	0.16	0.16 U
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.16 U	ug/m3	0.14	0.16	0.16 U
GRPCE-01-IA-	(Basement)	Trichloroethene (TCE)	0.16 U	ug/m3	0.14	0.16	0.16 U
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.16 U	ug/m3	0.15	0.16	0.16 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.038 U	ppbV	0.035	0.038	0.038 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	0.022 U	ppbV	0.016	0.022	0.022 U
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.038 U	ppbV	0.035	0.038	0.038 U

Samp_No		Analyte	Result Lab_Qualifier	Result_Units	MDL	RL	Val_Result Val_Qualifier
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.028 U	ppbV	0.025	0.028	0.028 U
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.059 U	ppbV	0.056	0.059	0.059 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	0.15 U	ug/m3	0.11	0.15	0.15 U
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.15 U	ug/m3	0.13	0.15	0.15 U
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.039 U	ppbV	0.036	0.039	0.039 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	0.023 U	ppbV	0.016	0.023	0.023 U
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.039 U	ppbV	0.035	0.039	0.039 U
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.073	ppbV	0.026	0.029	0.073
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.06 U	ppbV	0.057	0.06	0.06 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	0.15 U	ug/m3	0.11	0.15	0.15 U
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.39	ug/m3	0.14	0.15	0.39
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.15 U	ug/m3	0.15	0.15	0.15 U
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.038 U	ppbV	0.035	0.038	0.038 U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	2.3	ppbV	0.016	0.022	2.3
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.038 U	ppbV	0.035	0.038	0.038 U
GRPCE-01-IA-	(Basement)	Trichloroethene (TCE)	0.028 U	ppbV	0.025	0.028	0.028 U
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.059 U	ppbV	0.057	0.059	0.059 U
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	15	ug/m3	0.11	0.15	15
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-01-IA-	(Basement)	Trichloroethene (TCE)	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.037 U	ppbV	0.034	0.037	0.037 U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	0.13	ppbV	0.015	0.021	0.13
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.037 U	ppbV	0.033	0.037	0.037 U
GRPCE-01-IA-	(Basement)	Trichloroethene (TCE)	0.027 U	ppbV	0.024	0.027	0.027 U
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.057 U	ppbV	0.054	0.057	0.057 U
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.13	0.15	0.15 U

Samp_No		Analyte	Result Lab_Qualifier	Result_Units	MDL	RL	Val_Result Val_Qualifier
GRPCE-01-IA-	(Basement)	Tetrachloroethene	0.89	ug/m3	0.1	0.15	0.89
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.13	0.15	0.15 U
GRPCE-01-IA-	(Basement)	Trichloroethene (TCE)	0.15 U	ug/m3	0.13	0.15	0.15 U
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.043 U	ppbV	0.04	0.043	0.043 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	0.063	ppbV	0.018	0.025	0.063
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.043 U	ppbV	0.039	0.043	0.043 U
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.032 U	ppbV	0.028	0.032	0.032 U
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.067 U	ppbV	0.064	0.067	0.067 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.17 U	ug/m3	0.16	0.17	0.17 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	0.43	ug/m3	0.12	0.17	0.43
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.17 U	ug/m3	0.16	0.17	0.17 U
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.17 U	ug/m3	0.15	0.17	0.17 U
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.17 U	ug/m3	0.16	0.17	0.17 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.038 U	ppbV	0.035	0.038	0.038 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	0.037	ppbV	0.016	0.022	0.037
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.038 U	ppbV	0.034	0.038	0.038 U
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.028 U	ppbV	0.025	0.028	0.028 U
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.059 U	ppbV	0.056	0.059	0.059 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	0.25	ug/m3	0.11	0.15	0.25
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.15 U	ug/m3	0.13	0.15	0.15 U
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-01-IA-	(Main) DP	cis-1,2-Dichloroethene	0.039 U	ppbV	0.036	0.039	0.039 U
GRPCE-01-IA-	(Main) DP	Tetrachloroethene	0.038	ppbV	0.016	0.023	0.038
GRPCE-01-IA-	(Main) DP	trans-1,2-Dichloroethene	0.039 U	ppbV	0.035	0.039	0.039 U
GRPCE-01-IA-	(Main) DP	Trichloroethene (TCE)	0.029 U	ppbV	0.026	0.029	0.029 U
GRPCE-01-IA-	(Main) DP	Vinyl Chloride	0.06 U	ppbV	0.057	0.06	0.06 U
GRPCE-01-IA-	(Main) DP	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-01-IA-	(Main) DP	Tetrachloroethene	0.26	ug/m3	0.11	0.15	0.26
GRPCE-01-IA-	(Main) DP	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-01-IA-	(Main) DP	Trichloroethene (TCE)	0.15 U	ug/m3	0.14	0.15	0.15 U

Samp_No		Analyte	Result Lab_Qualifier	Result_Units	MDL	RL	Val_Result Val_Qualifier
GRPCE-01-IA-	(Main) DP	Vinyl Chloride	0.15 U	ug/m3	0.15	0.15	0.15 U
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.037 U	ppbV	0.034	0.037	0.037 U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	0.54	ppbV	0.016	0.022	0.54
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	1.8	ppbV	0.034	0.037	1.8
GRPCE-01-IA-	(Basement)	Trichloroethene (TCE)	0.027 U	ppbV	0.024	0.027	0.027 U
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.058 U	ppbV	0.055	0.058	0.058 U
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	3.7	ug/m3	0.11	0.15	3.7
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	7.2	ug/m3	0.13	0.15	7.2
GRPCE-01-IA-	(Basement)	Trichloroethene (TCE)	0.15 U	ug/m3	0.13	0.15	0.15 U
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.039 U	ppbV	0.036	0.039	0.039 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	0.23	ppbV	0.016	0.023	0.23
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	1.4	ppbV	0.035	0.039	1.4
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.029 U	ppbV	0.026	0.029	0.029 U
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.06 U	ppbV	0.057	0.06	0.06 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	1.5	ug/m3	0.11	0.15	1.5
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	5.6	ug/m3	0.14	0.15	5.6
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.15 U	ug/m3	0.15	0.15	0.15 U
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.035 U	ppbV	0.032	0.035	0.035 U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	0.1	ppbV	0.015	0.021	0.1
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.035 U	ppbV	0.032	0.035	0.035 U
GRPCE-01-IA-	(Basement)	Trichloroethene (TCE)	0.026 U	ppbV	0.023	0.026	0.026 U
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.054 U	ppbV	0.052	0.054	0.054 U
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.14 U	ug/m3	0.13	0.14	0.14 U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	0.69	ug/m3	0.1	0.14	0.69
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.14 U	ug/m3	0.13	0.14	0.14 U
GRPCE-01-IA-	(Basement)	Trichloroethene (TCE)	0.14 U	ug/m3	0.12	0.14	0.14 U
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.14 U	ug/m3	0.13	0.14	0.14 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.035 U	ppbV	0.032	0.035	0.035 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	0.078	ppbV	0.015	0.02	0.078

Samp_No		Analyte	Result Lab_Qualifier	Result_Units	MDL	RL	Val_Result Val_Qualifier
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.035 U	ppbV	0.031	0.035	0.035 U
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.026 U	ppbV	0.023	0.026	0.026 U
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.054 U	ppbV	0.051	0.054	0.054 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.14 U	ug/m3	0.13	0.14	0.14 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	0.53	ug/m3	0.099	0.14	0.53
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.14 U	ug/m3	0.12	0.14	0.14 U
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.14 U	ug/m3	0.12	0.14	0.14 U
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.14 U	ug/m3	0.13	0.14	0.14 U
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.038 U	ppbV	0.035	0.038	0.038 U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	0.11	ppbV	0.016	0.022	0.11
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.038 U	ppbV	0.035	0.038	0.038 U
GRPCE-01-IA-	(Basement)	Trichloroethene (TCE)	0.028 U	ppbV	0.025	0.028	0.028 U
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.059 U	ppbV	0.056	0.059	0.059 U
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	0.74	ug/m3	0.11	0.15	0.74
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-01-IA-	(Basement)	Trichloroethene (TCE)	0.15 U	ug/m3	0.13	0.15	0.15 U
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.039 U	ppbV	0.036	0.039	0.039 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	0.066	ppbV	0.016	0.023	0.066
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.039 U	ppbV	0.036	0.039	0.039 U
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.25	ppbV	0.026	0.029	0.25
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.061 U	ppbV	0.058	0.061	0.061 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.16 U	ug/m3	0.14	0.16	0.16 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	0.45	ug/m3	0.11	0.16	0.45
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.16 U	ug/m3	0.14	0.16	0.16 U
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	1.3	ug/m3	0.14	0.16	1.3
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.16 U	ug/m3	0.15	0.16	0.16 U
GRPCE-01-SS-		cis-1,2-Dichloroethene	0.038 U	ppbV	0.035	0.038	0.038 U
GRPCE-01-SS-		Tetrachloroethene	1.3	ppbV	0.016	0.022	1.3
GRPCE-01-SS-		trans-1,2-Dichloroethene	0.038 U	ppbV	0.034	0.038	0.038 U
GRPCE-01-SS-	_	Trichloroethene (TCE)	0.028 U	ppbV	0.025	0.028	0.028 U
GRPCE-01-SS-		Vinyl Chloride	0.058 U	ppbV	0.055	0.058	0.058 U

Samp_No	Analyte	Result Lab_Qualifier	Result_Units	MDL	RL	Val_Result Val_Qualifier
GRPCE-01-SS-	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-01-SS-	Tetrachloroethene	9.1	ug/m3	0.11	0.15	9.1
GRPCE-01-SS-	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-01-SS-	Trichloroethene (TCE)	0.15 U	ug/m3	0.13	0.15	0.15 U
GRPCE-01-SS-	Vinyl Chloride	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-01-SS-	cis-1,2-Dichloroethene	0.037 U	ppbV	0.034	0.037	0.037 U
GRPCE-01-SS-	Tetrachloroethene	67 D	ppbV	0.077	0.11	67
GRPCE-01-SS-	trans-1,2-Dichloroethene	0.043	ppbV	0.033	0.037	0.043
GRPCE-01-SS-	Trichloroethene (TCE)	0.53	ppbV	0.024	0.027	0.53
GRPCE-01-SS-	Vinyl Chloride	0.057 U	ppbV	0.054	0.057	0.057 U
GRPCE-01-SS-	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.13	0.15	0.15 U
GRPCE-01-SS-	Tetrachloroethene	460 D	ug/m3	0.52	0.73	460
GRPCE-01-SS-	trans-1,2-Dichloroethene	0.17	ug/m3	0.13	0.15	0.17
GRPCE-01-SS-	Trichloroethene (TCE)	2.8	ug/m3	0.13	0.15	2.8
GRPCE-01-SS-	Vinyl Chloride	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-02-SS-	cis-1,2-Dichloroethene	0.036 U	ppbV	0.033	0.036	0.036 U
GRPCE-02-SS-	Tetrachloroethene	3.7	ppbV	0.015	0.021	3.7
GRPCE-02-SS-	trans-1,2-Dichloroethene	0.036 U	ppbV	0.033	0.036	0.036 U
GRPCE-02-SS-	Trichloroethene (TCE)	0.027 U	ppbV	0.024	0.027	0.027 U
GRPCE-02-SS-	Vinyl Chloride	0.056 U	ppbV	0.053	0.056	0.056 U
GRPCE-02-SS-	cis-1,2-Dichloroethene	0.14 U	ug/m3	0.13	0.14	0.14 U
GRPCE-02-SS-	Tetrachloroethene	25	ug/m3	0.1	0.14	25
GRPCE-02-SS-	trans-1,2-Dichloroethene	0.14 U	ug/m3	0.13	0.14	0.14 U
GRPCE-02-SS-	Trichloroethene (TCE)	0.14 U	ug/m3	0.13	0.14	0.14 U
GRPCE-02-SS-	Vinyl Chloride	0.14 U	ug/m3	0.14	0.14	0.14 U
GRPCE-02-SS-	cis-1,2-Dichloroethene	0.04 U	ppbV	0.036	0.04	0.04 U
GRPCE-02-SS-	Tetrachloroethene	63 D	ppbV	0.083	0.12	63
GRPCE-02-SS-	trans-1,2-Dichloroethene	0.04 U	ppbV	0.036	0.04	0.04 U
GRPCE-02-SS-	Trichloroethene (TCE)	0.029 U	ppbV	0.026	0.029	0.029 U
GRPCE-02-SS-	Vinyl Chloride	0.061 U	ppbV	0.058	0.061	0.061 U
GRPCE-02-SS-	cis-1,2-Dichloroethene	0.16 U	ug/m3	0.14	0.16	0.16 U
GRPCE-02-SS-	Tetrachloroethene	420 D	ug/m3	0.57	0.79	420
GRPCE-02-SS-	trans-1,2-Dichloroethene	0.16 U	ug/m3	0.14	0.16	0.16 U

Samp_No	Analyte	Result Lab_Qualifier	Result_Units	MDL	RL	Val_Result Val_Qualifier
GRPCE-02-SS-	Trichloroethene (TCE)	0.16 U	ug/m3	0.14	0.16	0.16 U
GRPCE-02-SS-	Vinyl Chloride	0.16 U	ug/m3	0.15	0.16	0.16 U
GRPCE-02-SS-	cis-1,2-Dichloroethene	0.036 U	ppbV	0.033	0.036	0.036 U
GRPCE-02-SS-	Tetrachloroethene	43 D	ppbV	0.15	0.21	43
GRPCE-02-SS-	trans-1,2-Dichloroethene	0.036 U	ppbV	0.033	0.036	0.036 U
GRPCE-02-SS-	Trichloroethene (TCE)	0.027 U	ppbV	0.024	0.027	0.027 U
GRPCE-02-SS-	Vinyl Chloride	0.056 U	ppbV	0.054	0.056	0.056 U
GRPCE-02-SS-	cis-1,2-Dichloroethene	0.14 U	ug/m3	0.13	0.14	0.14 U
GRPCE-02-SS-	Tetrachloroethene	290 D	ug/m3	1	1.4	290
GRPCE-02-SS-	trans-1,2-Dichloroethene	0.14 U	ug/m3	0.13	0.14	0.14 U
GRPCE-02-SS-	Trichloroethene (TCE)	0.14 U	ug/m3	0.13	0.14	0.14 U
GRPCE-02-SS-	Vinyl Chloride	0.14 U	ug/m3	0.14	0.14	0.14 U
GRPCE-02-SS-	cis-1,2-Dichloroethene	0.036 U	ppbV	0.033	0.036	0.036 U
GRPCE-02-SS-	Tetrachloroethene	50 D	ppbV	0.15	0.21	50
GRPCE-02-SS-	trans-1,2-Dichloroethene	0.036 U	ppbV	0.033	0.036	0.036 U
GRPCE-02-SS-	Trichloroethene (TCE)	0.42	ppbV	0.024	0.027	0.42
GRPCE-02-SS-	Vinyl Chloride	0.056 U	ppbV	0.053	0.056	0.056 U
GRPCE-02-SS-	cis-1,2-Dichloroethene	0.14 U	ug/m3	0.13	0.14	0.14 U
GRPCE-02-SS-	Tetrachloroethene	340 D	ug/m3	1	1.4	340
GRPCE-02-SS-	trans-1,2-Dichloroethene	0.14 U	ug/m3	0.13	0.14	0.14 U
GRPCE-02-SS-	Trichloroethene (TCE)	2.3	ug/m3	0.13	0.14	2.3
GRPCE-02-SS-	Vinyl Chloride	0.14 U	ug/m3	0.14	0.14	0.14 U
GRPCE-03-SS-	cis-1,2-Dichloroethene	0.038 U	ppbV	0.035	0.038	0.038 U
GRPCE-03-SS-	Tetrachloroethene	56 D	ppbV	0.079	0.11	56
GRPCE-03-SS-	trans-1,2-Dichloroethene	0.038 U	ppbV	0.034	0.038	0.038 U
GRPCE-03-SS-	Trichloroethene (TCE)	0.028 U	ppbV	0.025	0.028	0.028 U
GRPCE-03-SS-	Vinyl Chloride	0.058 U	ppbV	0.055	0.058	0.058 U
GRPCE-03-SS-	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-03-SS-	Tetrachloroethene	380 D	ug/m3	0.54	0.75	380
GRPCE-03-SS-	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-03-SS-	Trichloroethene (TCE)	0.15 U	ug/m3	0.13	0.15	0.15 U
GRPCE-03-SS-	Vinyl Chloride	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-03-SS-	cis-1,2-Dichloroethene	0.038 U	ppbV	0.035	0.038	0.038 U

Samp_No	Analyte	Result Lab_Qualifier	Result_Units	MDL	RL	Val_Result Val_Qualifier
GRPCE-03-SS-	Tetrachloroethene	0.022 U	ppbV	0.016	0.022	0.022 U
GRPCE-03-SS-	trans-1,2-Dichloroethene	0.038 U	ppbV	0.035	0.038	0.038 U
GRPCE-03-SS-	Trichloroethene (TCE)	0.028 U	ppbV	0.025	0.028	0.028 U
GRPCE-03-SS-	Vinyl Chloride	0.059 U	ppbV	0.057	0.059	0.059 U
GRPCE-03-SS-	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-03-SS-	Tetrachloroethene	0.15 U	ug/m3	0.11	0.15	0.15 U
GRPCE-03-SS-	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-03-SS-	Trichloroethene (TCE)	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-03-SS-	Vinyl Chloride	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-OA-	cis-1,2-Dichloroethene	0.061 U	ppbV	0.056	0.061	0.061 U
GRPCE-OA-	Tetrachloroethene	0.035 U	ppbV	0.025	0.035	0.035 U
GRPCE-OA-	trans-1,2-Dichloroethene	0.061 U	ppbV	0.055	0.061	0.061 U
GRPCE-OA-	Trichloroethene (TCE)	0.045 U	ppbV	0.04	0.045	0.045 U
GRPCE-OA-	Vinyl Chloride	0.094 U	ppbV	0.089	0.094	0.094 U
GRPCE-OA-	cis-1,2-Dichloroethene	0.24 U	ug/m3	0.22	0.24	0.24 U
GRPCE-OA-	Tetrachloroethene	0.24 U	ug/m3	0.17	0.24	0.24 U
GRPCE-OA-	trans-1,2-Dichloroethene	0.24 U	ug/m3	0.22	0.24	0.24 U
GRPCE-OA-	Trichloroethene (TCE)	0.24 U	ug/m3	0.21	0.24	0.24 U
GRPCE-OA-	Vinyl Chloride	0.24 U	ug/m3	0.23	0.24	0.24 U



February 20, 2017

Betsy Nightingale On-Scene Coordinator U.S. Environmental Protection Agency Region 5 9311 Groh Road Grosse Ile, MI 48138-1697

Subject: Data Validation Reports

Grand Rapids VI ER

EPA Contract No. EP-S5-13-01

Technical Direction Document No. S05-0001-1605-010

Document Tracking No. 1498

Dear Ms. Nightingale:

Tetra Tech, Inc. (Tetra Tech) is submitting these Data Validation Reports for 54 air samples (including four field duplicates) collected at the Grand Rapids VI ER site. The samples were collected from February 1 through 3, 2017 and were analyzed for volatile organic compounds by ALS Environmental Laboratories. Tetra Tech received the last of the data on February 15, 2017.

Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines* (NFG) for Superfund Organic Methods Data Review (August 2014).

No rejection of results was required for these data sets. The data is usable as qualified based on the findings of this validation effort.

If you have any questions regarding these Data Validation Reports, please call me at (662) 681-5727.

Sincerely,

Jessica A. Vickers START Chemist

Enclosure

cc: Kevin Scott, Tetra Tech Program Manager

Michael Browning, Tetra Tech Project Manager

TDD File

Jesaca a Vickers

ATTACHMENT 1

DATA VALIDATION REPORTS
ALS ENVIRONMENTAL REPORT NOS. P1700530, P1700531, AND P1700532

Site Name	Grand Rapids VI ER	TDD No.	S05-0001-1605-010
Document Tracking No.	1498A	TOD NO.	303-0001-1603-010
Data Reviewer (signature and date)	Jeoaca A. Vickers February 16, 2017	Technical Reviewer (signature and date)	Hang N. Elis III 20 February 2017
Laboratory Report No.	P1700530	Laboratory	ALS Laboratories/Simi Valley, CA
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15	
Samples and Matrix	19 air samples (including a field duplicate)		
Field Duplicate Pairs	GRPCE-02-SS-	DP	
Field Blanks	None		

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrument Performance Checks:

Within Criteria	Exceedance/Notes
Υ	

Initial Calibration:

Within Criteria	Exceedance/Notes
Υ	

Continuing Calibration:

Within Criteria	Exceedance/Notes
Y	

Calibration Verification:

Within Criteria	Exceedance/Notes
Υ	

Method blanks:

Within Criteria	Exceedance/Notes
Υ	

Field blanks:

Within Criteria	Exceedance/Notes
NA	



Interference Check San	ples (ICS)	(ICP metals only	/):
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Within Criteria	Exceedance/Notes
NA	
System mor	nitoring compounds (surrogates and labeled compounds):
Within Criteria	Exceedance/Notes

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within	Freedom of Makes	Exceedance/Notes
Criteria		Exceedance/ Notes
NA		

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
Υ	



Field duplicates:

Within Criteria	Exceedance/Notes
Υ	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
N	P170210: The recovery for vinyl chloride was above the acceptance limit; however, no qualifications were applied because the associated results were non-detect.



Sample dilutions:

Within Criteria	Exceedance/Notes							
	1.43x: VOCs for GRPCE-01-IA- (Basement)							
	1.44x: VOCs for GRPCE-02-SS-							
	1.45x: VOCs for GRPCE-02-IA- (Basement) and GRPCE-07-IA- (Basement)							
	1.48x: VOCs for GRPCE-01-IA- (Basement)							
	1.50x: VOCs except tetrachloroethene for GRPCE-02-SS-							
	1.51x: VOCs for GRPCE-01-IA- (Basement)							
	1.52x: VOCs for GRPCE-02-IA- (Main)							
	1.53x: VOCs for GRPCE-02-IA- (Basement Hall)							
	1.58x: VOCs for GRPCE-07-IA- (Main) and GRPCE-02-IA- (Main)							
	1.62x: VOCs for GRPCE-01-IA- (Main)							
Υ	1.67x: VOCs for GRPCE-01-IA- (Main) and GRPCE-01-IA- (Main)							
'	3.525x: VOCs except tetrachloroethene for GRPCE-02-SS-							
	3.60x: VOCs except tetrachloroethene for GRPCE-02-SS-							
	7.45x: VOCs except tetrachloroethene for GRPCE-01-SS-							
	15.0x: tetrachloroethene for GRPCE-02-SS-							
	19.5x: VOCs except tetrachloroethene for GRPCE-01-SS-							
	28.2x: tetrachloroethene for GRPCE-02-SS-							
	28.8x: tetrachloroethene for GRPCE-02-SS-							
	29.0x: VOCs except tetrachloroethene for GRPCE-02-SS-							
	29.8x: tetrachloroethene for GRPCE-01-SS-							
	96.7x: tetrachloroethene for GRPCE-02-SS-							
	97.3x: tetrachloroethene for GRPCE-01-SS-							

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
Υ	

Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	All results were either non-detect or above RL.

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	



Other [specify]:

Within Criteria	FXCPPGANCP/NOTPS
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.



Samp_No		Analyte	Result Lab_Qualifier	Units	MDL	RL	Val_Result Val_Qualifier
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.036 U	ppbV	0.033	0.036	0.036 U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	0.99	ppbV	0.015	0.021	0.99
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.036 U	ppbV	0.033	0.036	0.036 U
GRPCE-01-IA-	(Basement)	Trichloroethene (TCE)	0.027 U	ppbV	0.024	0.027	0.027 U
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.056 U	ppbV	0.053	0.056	0.056 U
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.14 U	ug/m3	0.13	0.14	0.14 U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	6.7	ug/m3	0.1	0.14	6.7
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.14 U	ug/m3	0.13	0.14	0.14 U
GRPCE-01-IA-	(Basement)	Trichloroethene (TCE)	0.14 U	ug/m3	0.13	0.14	0.14 U
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.14 U	ug/m3	0.14	0.14	0.14 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.041 U	ppbV	0.038	0.041	0.041 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	0.8	ppbV	0.017	0.024	0.8
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.041 U	ppbV	0.037	0.041	0.041 U
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.14	ppbV	0.027	0.03	0.14
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.063 U	ppbV	0.06	0.063	0.063 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.16 U	ug/m3	0.15	0.16	0.16 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	5.5	ug/m3	0.12	0.16	5.5
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.16 U	ug/m3	0.15	0.16	0.16 U
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.76	ug/m3	0.14	0.16	0.76
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.16 U	ug/m3	0.15	0.16	0.16 U
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.037 U	ppbV	0.034	0.037	0.037 U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	0.53	ppbV	0.016	0.022	0.53
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.037 U	ppbV	0.034	0.037	0.037 U
GRPCE-01-IA-	(Basement)	Trichloroethene (TCE)	0.028 U	ppbV	0.025	0.028	0.028 U
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.058 U	ppbV	0.055	0.058	0.058 U
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	3.6	ug/m3	0.11	0.15	3.6
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.13	0.15	0.15 U
GRPCE-01-IA-	(Basement)	Trichloroethene (TCE)	0.15 U	ug/m3	0.13	0.15	0.15 U
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.042 U	ppbV	0.039	0.042	0.042 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	0.45	ppbV	0.018	0.025	0.45
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.042 U	ppbV	0.038	0.042	0.042 U

Samp_No		Analyte	Result Lab_Qualifier	Units	MDL	RL	Val_Result Val_Qualifier
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.031 U	ppbV	0.028	0.031	0.031 U
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.065 U	ppbV	0.062	0.065	0.065 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.17 U	ug/m3	0.15	0.17	0.17 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	3	ug/m3	0.12	0.17	3
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.17 U	ug/m3	0.15	0.17	0.17 U
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.17 U	ug/m3	0.15	0.17	0.17 U
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.17 U	ug/m3	0.16	0.17	0.17 U
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.038 U	ppbV	0.035	0.038	0.038 U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	0.39	ppbV	0.016	0.022	0.39
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.038 U	ppbV	0.035	0.038	0.038 U
GRPCE-01-IA-	(Basement)	Trichloroethene (TCE)	0.028 U	ppbV	0.025	0.028	0.028 U
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.059 U	ppbV	0.056	0.059	0.059 U
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	2.7	ug/m3	0.11	0.15	2.7
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-01-IA-	(Basement)	Trichloroethene (TCE)	0.15 U	ug/m3	0.13	0.15	0.15 U
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.042 U	ppbV	0.039	0.042	0.042 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	0.22	ppbV	0.018	0.025	0.22
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.042 U	ppbV	0.038	0.042	0.042 U
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.031 U	ppbV	0.028	0.031	0.031 U
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.065 U	ppbV	0.062	0.065	0.065 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.17 U	ug/m3	0.15	0.17	0.17 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	1.5	ug/m3	0.12	0.17	1.5
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.17 U	ug/m3	0.15	0.17	0.17 U
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.17 U	ug/m3	0.15	0.17	0.17 U
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.17 U	ug/m3	0.16	0.17	0.17 U
GRPCE-01-SS-		cis-1,2-Dichloroethene	1.8	ppbV	0.45	0.49	1.8
GRPCE-01-SS-		Tetrachloroethene	1400 D	ppbV	1	1.4	1400
GRPCE-01-SS-		trans-1,2-Dichloroethene	0.58	ppbV	0.45	0.49	0.58
GRPCE-01-SS-		Trichloroethene (TCE)	32	ppbV	0.32	0.36	32
GRPCE-01-SS-		Vinyl Chloride	0.76 U	ppbV	0.72	0.76	0.76 U
GRPCE-01-SS-		cis-1,2-Dichloroethene	7.3	ug/m3	1.8	1.9	7.3

Samp_No		Analyte	Result Lab_Qualifier	Units	MDL	RL	Val_Result Val_Qualifier
GRPCE-01-SS-		Tetrachloroethene	9700 D	ug/m3	7	9.7	9700
GRPCE-01-SS-		trans-1,2-Dichloroethene	2.3	ug/m3	1.8	1.9	2.3
GRPCE-01-SS-		Trichloroethene (TCE)	170	ug/m3	1.7	1.9	170
GRPCE-01-SS-		Vinyl Chloride	1.9 U	ug/m3	1.8	1.9	1.9 U
GRPCE-01-SS-		cis-1,2-Dichloroethene	0.19 U	ppbV	0.17	0.19	0.19 U
GRPCE-01-SS-		Tetrachloroethene	170 D	ppbV	0.32	0.44	170
GRPCE-01-SS-		trans-1,2-Dichloroethene	0.19 U	ppbV	0.17	0.19	0.19 U
GRPCE-01-SS-		Trichloroethene (TCE)	0.14 U	ppbV	0.12	0.14	0.14 U
GRPCE-01-SS-		Vinyl Chloride	0.29 U	ppbV	0.28	0.29	0.29 U
GRPCE-01-SS-		cis-1,2-Dichloroethene	0.75 U	ug/m3	0.69	0.75	0.75 U
GRPCE-01-SS-		Tetrachloroethene	1100 D	ug/m3	2.1	3	1100
GRPCE-01-SS-		trans-1,2-Dichloroethene	0.75 U	ug/m3	0.68	0.75	0.75 U
GRPCE-01-SS-		Trichloroethene (TCE)	0.75 U	ug/m3	0.66	0.75	0.75 U
GRPCE-01-SS-		Vinyl Chloride	0.75 U	ug/m3	0.71	0.75	0.75 U
GRPCE-02-IA-	(Basement Hall)	cis-1,2-Dichloroethene	0.039 U	ppbV	0.036	0.039	0.039 U
GRPCE-02-IA-	(Basement Hall)	Tetrachloroethene	0.79	ppbV	0.016	0.023	0.79
GRPCE-02-IA-	(Basement Hall)	trans-1,2-Dichloroethene	0.039 U	ppbV	0.035	0.039	0.039 U
GRPCE-02-IA-	(Basement Hall)	Trichloroethene (TCE)	0.028 U	ppbV	0.025	0.028	0.028 U
GRPCE-02-IA-	(Basement Hall)	Vinyl Chloride	0.06 U	ppbV	0.057	0.06	0.06 U
GRPCE-02-IA-	(Basement Hall)	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-02-IA-	(Basement Hall)	Tetrachloroethene	5.4	ug/m3	0.11	0.15	5.4
GRPCE-02-IA-	(Basement Hall)	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-02-IA-	(Basement Hall)	Trichloroethene (TCE)	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-02-IA-	(Basement Hall)	Vinyl Chloride	0.15 U	ug/m3	0.15	0.15	0.15 U
GRPCE-02-IA-	(Main)	cis-1,2-Dichloroethene	0.04 U	ppbV	0.037	0.04	0.04 U
GRPCE-02-IA-	(Main)	Tetrachloroethene	0.59	ppbV	0.017	0.023	0.59
GRPCE-02-IA-	(Main)	trans-1,2-Dichloroethene	0.04 U	ppbV	0.036	0.04	0.04 U
GRPCE-02-IA-	(Main)	Trichloroethene (TCE)	0.029 U	ppbV	0.026	0.029	0.029 U
GRPCE-02-IA-	(Main)	Vinyl Chloride	0.062 U	ppbV	0.059	0.062	0.062 U
GRPCE-02-IA-	(Main)	cis-1,2-Dichloroethene	0.16 U	ug/m3	0.15	0.16	0.16 U
GRPCE-02-IA-	(Main)	Tetrachloroethene	4	ug/m3	0.11	0.16	4
GRPCE-02-IA-	(Main)	trans-1,2-Dichloroethene	0.16 U	ug/m3	0.14	0.16	0.16 U
GRPCE-02-IA-	(Main)	Trichloroethene (TCE)	0.16 U	ug/m3	0.14	0.16	0.16 U

Samp_No		Analyte	Result Lab_Qualifier	Units	MDL	RL	Val_Result Val_Qualifier
GRPCE-02-IA-	(Main)	Vinyl Chloride	0.16 U	ug/m3	0.15	0.16	0.16 U
GRPCE-02-IA-	(Basement)	cis-1,2-Dichloroethene	0.037 U	ppbV	0.034	0.037	0.037 U
GRPCE-02-IA-	(Basement)	Tetrachloroethene	0.021 U	ppbV	0.015	0.021	0.021 U
GRPCE-02-IA-	(Basement)	trans-1,2-Dichloroethene	0.037 U	ppbV	0.033	0.037	0.037 U
GRPCE-02-IA-	(Basement)	Trichloroethene (TCE)	0.027 U	ppbV	0.024	0.027	0.027 U
GRPCE-02-IA-	(Basement)	Vinyl Chloride	0.057 U	ppbV	0.054	0.057	0.057 U
GRPCE-02-IA-	(Basement)	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.13	0.15	0.15 U
GRPCE-02-IA-	(Basement)	Tetrachloroethene	0.15 U	ug/m3	0.1	0.15	0.15 U
GRPCE-02-IA-	(Basement)	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.13	0.15	0.15 U
GRPCE-02-IA-	(Basement)	Trichloroethene (TCE)	0.15 U	ug/m3	0.13	0.15	0.15 U
GRPCE-02-IA-	(Basement)	Vinyl Chloride	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-02-IA-	(Main)	cis-1,2-Dichloroethene	0.038 U	ppbV	0.035	0.038	0.038 U
GRPCE-02-IA-	(Main)	Tetrachloroethene	0.59	ppbV	0.016	0.022	0.59
GRPCE-02-IA-	(Main)	trans-1,2-Dichloroethene	0.038 U	ppbV	0.035	0.038	0.038 U
GRPCE-02-IA-	(Main)	Trichloroethene (TCE)	0.028 U	ppbV	0.025	0.028	0.028 U
GRPCE-02-IA-	(Main)	Vinyl Chloride	0.059 U	ppbV	0.057	0.059	0.059 U
GRPCE-02-IA-	(Main)	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-02-IA-	(Main)	Tetrachloroethene	4	ug/m3	0.11	0.15	4
GRPCE-02-IA-	(Main)	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-02-IA-	(Main)	Trichloroethene (TCE)	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-02-IA-	(Main)	Vinyl Chloride	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-02-SS-		cis-1,2-Dichloroethene	0.036 U	ppbV	0.033	0.036	0.036 U
GRPCE-02-SS-		Tetrachloroethene	0.87	ppbV	0.015	0.021	0.87
GRPCE-02-SS-		trans-1,2-Dichloroethene	0.036 U	ppbV	0.033	0.036	0.036 U
GRPCE-02-SS-		Trichloroethene (TCE)	0.027 U	ppbV	0.024	0.027	0.027 U
GRPCE-02-SS-		Vinyl Chloride	0.056 U	ppbV	0.054	0.056	0.056 U
GRPCE-02-SS-		cis-1,2-Dichloroethene	0.14 U	ug/m3	0.13	0.14	0.14 U
GRPCE-02-SS-		Tetrachloroethene	5.9	ug/m3	0.1	0.14	5.9
GRPCE-02-SS-		trans-1,2-Dichloroethene	0.14 U	ug/m3	0.13	0.14	0.14 U
GRPCE-02-SS-		Trichloroethene (TCE)	0.14 U	ug/m3	0.13	0.14	0.14 U
GRPCE-02-SS-		Vinyl Chloride	0.14 U	ug/m3	0.14	0.14	0.14 U
GRPCE-02-SS-		cis-1,2-Dichloroethene	0.73 U	ppbV	0.67	0.73	0.73 U
GRPCE-02-SS-		Tetrachloroethene	770 D	ppbV	1	1.4	770

Samp_No	Analyte	Result Lab_Qualifier	Units	MDL	RL	Val_Result Val_Qualifier
GRPCE-02-SS-	trans-1,2-Dichloroethene	0.73 U	ppbV	0.67	0.73	0.73 U
GRPCE-02-SS-	Trichloroethene (TCE)	3.5	ppbV	0.48	0.54	3.5
GRPCE-02-SS-	Vinyl Chloride	1.1 U	ppbV	1.1	1.1	1.1 U
GRPCE-02-SS-	cis-1,2-Dichloroethene	2.9 U	ug/m3	2.7	2.9	2.9 U
GRPCE-02-SS-	Tetrachloroethene	5200 D	ug/m3	7	9.7	5200
GRPCE-02-SS-	trans-1,2-Dichloroethene	2.9 U	ug/m3	2.6	2.9	2.9 U
GRPCE-02-SS-	Trichloroethene (TCE)	19	ug/m3	2.6	2.9	19
GRPCE-02-SS-	Vinyl Chloride	2.9 U	ug/m3	2.8	2.9	2.9 U
GRPCE-02-SS-	cis-1,2-Dichloroethene	0.038 U	ppbV	0.035	0.038	0.038 U
GRPCE-02-SS-	Tetrachloroethene	130 D	ppbV	0.16	0.22	130
GRPCE-02-SS-	trans-1,2-Dichloroethene	0.038 U	ppbV	0.034	0.038	0.038 U
GRPCE-02-SS-	Trichloroethene (TCE)	0.95	ppbV	0.025	0.028	0.95
GRPCE-02-SS-	Vinyl Chloride	0.059 U	ppbV	0.056	0.059	0.059 U
GRPCE-02-SS-	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-02-SS-	Tetrachloroethene	880 D	ug/m3	1.1	1.5	880
GRPCE-02-SS-	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-02-SS-	Trichloroethene (TCE)	5.1	ug/m3	0.13	0.15	5.1
GRPCE-02-SS-	Vinyl Chloride	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-02-SS-	cis-1,2-Dichloroethene	0.089 U	ppbV	0.082	0.089	0.089 U
GRPCE-02-SS-	Tetrachloroethene	190 D	ppbV	0.3	0.42	190
GRPCE-02-SS-	trans-1,2-Dichloroethene	0.089 U	ppbV	0.081	0.089	0.089 U
GRPCE-02-SS-	Trichloroethene (TCE)	0.077	ppbV	0.058	0.066	0.077
GRPCE-02-SS-	Vinyl Chloride	0.14 U	ppbV	0.13	0.14	0.14 U
GRPCE-02-SS-	cis-1,2-Dichloroethene	0.35 U	ug/m3	0.32	0.35	0.35 U
GRPCE-02-SS-	Tetrachloroethene	1300 D	ug/m3	2	2.8	1300
GRPCE-02-SS-	trans-1,2-Dichloroethene	0.35 U	ug/m3	0.32	0.35	0.35 U
GRPCE-02-SS-	Trichloroethene (TCE)	0.42	ug/m3	0.31	0.35	0.42
GRPCE-02-SS-	Vinyl Chloride	0.35 U	ug/m3	0.33	0.35	0.35 U
GRPCE-02-SS-	cis-1,2-Dichloroethene	0.091 U	ppbV	0.084	0.091	0.091 U
GRPCE-02-SS-	Tetrachloroethene	190 D	ppbV	0.31	0.42	190
GRPCE-02-SS-	trans-1,2-Dichloroethene	0.091 U	ppbV	0.083	0.091	0.091 U
GRPCE-02-SS-	Trichloroethene (TCE)	0.068	ppbV	0.06	0.067	0.068
GRPCE-02-SS-	Vinyl Chloride	0.14 U	ppbV	0.13	0.14	0.14 U

Samp_No		Analyte	Result Lab_Qualifier	Units	MDL	RL	Val_Result Val_Qualifier
GRPCE-02-SS-		cis-1,2-Dichloroethene	0.36 U	ug/m3	0.33	0.36	0.36 U
GRPCE-02-SS-		Tetrachloroethene	1300 D	ug/m3	2.1	2.9	1300
GRPCE-02-SS-		trans-1,2-Dichloroethene	0.36 U	ug/m3	0.33	0.36	0.36 U
GRPCE-02-SS-		Trichloroethene (TCE)	0.37	ug/m3	0.32	0.36	0.37
GRPCE-02-SS-		Vinyl Chloride	0.36 U	ug/m3	0.34	0.36	0.36 U
GRPCE-07-IA-	(Basement)	cis-1,2-Dichloroethene	0.037 U	ppbV	0.034	0.037	0.037 U
GRPCE-07-IA-	(Basement)	Tetrachloroethene	0.54	ppbV	0.015	0.021	0.54
GRPCE-07-IA-	(Basement)	trans-1,2-Dichloroethene	0.037 U	ppbV	0.033	0.037	0.037 U
GRPCE-07-IA-	(Basement)	Trichloroethene (TCE)	0.027 U	ppbV	0.024	0.027	0.027 U
GRPCE-07-IA-	(Basement)	Vinyl Chloride	0.057 U	ppbV	0.054	0.057	0.057 U
GRPCE-07-IA-	(Basement)	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.13	0.15	0.15 U
GRPCE-07-IA-	(Basement)	Tetrachloroethene	3.6	ug/m3	0.1	0.15	3.6
GRPCE-07-IA-	(Basement)	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.13	0.15	0.15 U
GRPCE-07-IA-	(Basement)	Trichloroethene (TCE)	0.15 U	ug/m3	0.13	0.15	0.15 U
GRPCE-07-IA-	(Basement)	Vinyl Chloride	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-07-IA-	(Main)	cis-1,2-Dichloroethene	0.04 U	ppbV	0.037	0.04	0.04 U
GRPCE-07-IA-	(Main)	Tetrachloroethene	0.68	ppbV	0.017	0.023	0.68
GRPCE-07-IA-	(Main)	trans-1,2-Dichloroethene	0.04 U	ppbV	0.036	0.04	0.04 U
GRPCE-07-IA-	(Main)	Trichloroethene (TCE)	0.029 U	ppbV	0.026	0.029	0.029 U
GRPCE-07-IA-	(Main)	Vinyl Chloride	0.062 U	ppbV	0.059	0.062	0.062 U
GRPCE-07-IA-	(Main)	cis-1,2-Dichloroethene	0.16 U	ug/m3	0.15	0.16	0.16 U
GRPCE-07-IA-	(Main)	Tetrachloroethene	4.6	ug/m3	0.11	0.16	4.6
GRPCE-07-IA-	(Main)	trans-1,2-Dichloroethene	0.16 U	ug/m3	0.14	0.16	0.16 U
GRPCE-07-IA-	(Main)	Trichloroethene (TCE)	0.16 U	ug/m3	0.14	0.16	0.16 U
GRPCE-07-IA-	(Main)	Vinyl Chloride	0.16 U	ug/m3	0.15	0.16	0.16 U

Site Name	Grand Rapids VI ER	TDD No.	S05-0001-1605-010		
Document Tracking No.	1498B	TDD NO.	303-0001-1603-010		
Data Reviewer (signature and date)	Jeoaca A. Vickers February 16, 2017	Technical Reviewer (signature and date)	Hang N. Elis III 20 February 2017		
Laboratory Report No.	P1700531	Laboratory	ALS Laboratories/Simi Valley, CA		
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15			
Samples and Matrix	19 air samples (including a field duplicate)				
Field Duplicate Pairs	GRPCE-01-IA- (Main)/GRPCE	PCE-01-IA-			
Field Blanks	None				

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	



Instrument Performance Checks:

Within Criteria	Exceedance/Notes
Υ	

Initial Calibration:

Within Criteria	Exceedance/Notes
Υ	

Continuing Calibration:

Within Criteria	Exceedance/Notes
Y	

Calibration Verification:

Within Criteria	Exceedance/Notes
Υ	

Method blanks:

Within Criteria	Exceedance/Notes
Υ	

Field blanks:

Within Criteria	Exceedance/Notes
NA	



Interference Check Sam	iples (ICS)) (ICP	metals	only):
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Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Υ	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

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
-	Υ	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Υ	

Sample dilutions:

Within Criteria	Exceedance/Notes				
	1.37x: VOCs for GRPCE-07-IA-	(Basement)			
	1.40x: VOCs for GRPCE-01-IA-	(Basement)			
	1.43x: VOCs for GRPCE-01-IA-	(Basement) a	nd GRPCE-01-IA-	(Main),	
	1.44x: VOCs for GRPCE-02-IA-	(Basement),	GRPCE-02-IA-	asement), and	
	GRPCE-07-IA-	ement)			
V	1.48x: VOCs for GRPCE-01-IA-	(Main)	1.49x: VOCs for GRPCE-0	1-IA-	(Main)
Ť	1.51x: VOCs for GRPCE-02-IA-	(Main)	1.52x: VOCs for GRPCE-0	1-IA-	(Basement)
	1.53x: VOCs for GRPCE-01-IA-	(Main)-DP	1.54x: VOCs for GRPCE-0)2-IA-	(Main)
	1.56x: VOCs for GRPCE-07-IA-	(Main)	1.60x: VOCs for GRPCE-0	7-IA-	(Main)
	3.70x: VOCs for GRPCE-02-SS-		9.93x: VOCs for GRPCE-0)2-SS-	
	26.4x: VOCs for GRPCE-02-SS-		28.4x: VOCs except tetra	chloroethene for	· GRPCE-02-SS-
	94.6x: tetrachloroethene for GRPCE-	02-SS-			

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
Υ	

Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Υ	All results were either non-detect or above RL.

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	



Other [specify]:

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.



Samp_No		Analyte	Result Lab_Qualifier	Units	MDL	RL	Val_Result Val_Qualifier
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.036 U	ppbV	0.0033	0.036	0.036 U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	0.39	ppbV	0.0017	0.021	0.39
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.036 U	ppbV	0.0026	0.036	0.036 U
GRPCE-01-IA-	(Basement)	Trichloroethene (TCE)	0.027 U	ppbV	0.0023	0.027	0.027 U
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.056 U	ppbV	0.0043	0.056	0.056 U
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.14 U	ug/m3	0.013	0.14	0.14 U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	2.7	ug/m3	0.012	0.14	2.7
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.14 U	ug/m3	0.01	0.14	0.14 U
GRPCE-01-IA-	(Basement)	Trichloroethene (TCE)	0.14 U	ug/m3	0.012	0.14	0.14 U
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.14 U	ug/m3	0.011	0.14	0.14 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.036 U	ppbV	0.0033	0.036	0.036 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	0.36	ppbV	0.0017	0.021	0.36
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.036 U	ppbV	0.0026	0.036	0.036 U
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.027 U	ppbV	0.0023	0.027	0.027 U
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.056 U	ppbV	0.0043	0.056	0.056 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.14 U	ug/m3	0.013	0.14	0.14 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	2.5	ug/m3	0.012	0.14	2.5
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.14 U	ug/m3	0.01	0.14	0.14 U
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.14 U	ug/m3	0.012	0.14	0.14 U
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.14 U	ug/m3	0.011	0.14	0.14 U
GRPCE-01-IA-	(Main)-Dp	cis-1,2-Dichloroethene	0.039 U	ppbV	0.0036	0.039	0.039 U
GRPCE-01-IA-	(Main)-Dp	Tetrachloroethene	0.37	ppbV	0.0019	0.023	0.37
GRPCE-01-IA-	(Main)-Dp	trans-1,2-Dichloroethene	0.039 U	ppbV	0.0028	0.039	0.039 U
GRPCE-01-IA-	(Main)-Dp	Trichloroethene (TCE)	0.028 U	ppbV	0.0024	0.028	0.028 U
GRPCE-01-IA-	(Main)-Dp	Vinyl Chloride	0.06 U	ppbV	0.0046	0.06	0.06 U
GRPCE-01-IA-	(Main)-Dp	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.014	0.15	0.15 U
GRPCE-01-IA-	(Main)-Dp	Tetrachloroethene	2.5	ug/m3	0.013	0.15	2.5
GRPCE-01-IA-	(Main)-Dp	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.011	0.15	0.15 U
GRPCE-01-IA-	(Main)-Dp	Trichloroethene (TCE)	0.15 U	ug/m3	0.013	0.15	0.15 U
GRPCE-01-IA-	(Main)-Dp	Vinyl Chloride	0.15 U	ug/m3	0.012	0.15	0.15 U
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.035 U	ppbV	0.0032	0.035	0.035 U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	0.49	ppbV	0.0017	0.021	0.49
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.035 U	ppbV	0.0026	0.035	0.035 U

Samp_No		Analyte	Result Lab_Qualifier	Units	MDL	RL	Val_Result Val_Qualifier
GRPCE-01-IA-	(Basement)	Trichloroethene (TCE)	0.026 U	ppbV	0.0022	0.026	0.026 U
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.055 U	ppbV	0.0042	0.055	0.055 U
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.14 U	ug/m3	0.013	0.14	0.14 U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	3.3	ug/m3	0.011	0.14	3.3
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.14 U	ug/m3	0.01	0.14	0.14 U
GRPCE-01-IA-	(Basement)	Trichloroethene (TCE)	0.14 U	ug/m3	0.012	0.14	0.14 U
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.14 U	ug/m3	0.011	0.14	0.14 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.038 U	ppbV	0.0035	0.038	0.038 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	0.46	ppbV	0.0018	0.022	0.46
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.038 U	ppbV	0.0027	0.038	0.038 U
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.028 U	ppbV	0.0024	0.028	0.028 U
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.058 U	ppbV	0.0044	0.058	0.058 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.014	0.15	0.15 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	3.1	ug/m3	0.012	0.15	3.1
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.011	0.15	0.15 U
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.15 U	ug/m3	0.013	0.15	0.15 U
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.15 U	ug/m3	0.011	0.15	0.15 U
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.038 U	ppbV	0.0035	0.038	0.038 U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	0.31	ppbV	0.0018	0.022	0.31
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.038 U	ppbV	0.0028	0.038	0.038 U
GRPCE-01-IA-	(Basement)	Trichloroethene (TCE)	0.028 U	ppbV	0.0024	0.028	0.028 U
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.059 U	ppbV	0.0045	0.059	0.059 U
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.014	0.15	0.15 U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	2.1	ug/m3	0.012	0.15	2.1
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.011	0.15	0.15 U
GRPCE-01-IA-	(Basement)	Trichloroethene (TCE)	0.15 U	ug/m3	0.013	0.15	0.15 U
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.15 U	ug/m3	0.012	0.15	0.15 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.037 U	ppbV	0.0034	0.037	0.037 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	0.28	ppbV	0.0018	0.022	0.28
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.037 U	ppbV	0.0027	0.037	0.037 U
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.028 U	ppbV	0.0023	0.028	0.028 U
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.058 U	ppbV	0.0044	0.058	0.058 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.014	0.15	0.15 U

Samp_No		Analyte	Result Lab_Qualifier	Units	MDL	RL	Val_Result Val_Qualifier
GRPCE-01-IA-	(Main)	Tetrachloroethene	1.9	ug/m3	0.012	0.15	1.9
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.011	0.15	0.15 U
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.15 U	ug/m3	0.013	0.15	0.15 U
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.15 U	ug/m3	0.011	0.15	0.15 U
GRPCE-02-IA-	(Basement)	cis-1,2-Dichloroethene	0.036 U	ppbV	0.0033	0.036	0.036 U
GRPCE-02-IA-	(Basement)	Tetrachloroethene	0.92	ppbV	0.0017	0.021	0.92
GRPCE-02-IA-	(Basement)	trans-1,2-Dichloroethene	0.036 U	ppbV	0.0027	0.036	0.036 U
GRPCE-02-IA-	(Basement)	Trichloroethene (TCE)	0.027 U	ppbV	0.0023	0.027	0.027 U
GRPCE-02-IA-	(Basement)	Vinyl Chloride	0.056 U	ppbV	0.0043	0.056	0.056 U
GRPCE-02-IA-	(Basement)	cis-1,2-Dichloroethene	0.14 U	ug/m3	0.013	0.14	0.14 U
GRPCE-02-IA-	(Basement)	Tetrachloroethene	6.3	ug/m3	0.012	0.14	6.3
GRPCE-02-IA-	(Basement)	trans-1,2-Dichloroethene	0.14 U	ug/m3	0.011	0.14	0.14 U
GRPCE-02-IA-	(Basement)	Trichloroethene (TCE)	0.14 U	ug/m3	0.012	0.14	0.14 U
GRPCE-02-IA-	(Basement)	Vinyl Chloride	0.14 U	ug/m3	0.011	0.14	0.14 U
GRPCE-02-IA-	(Main)	cis-1,2-Dichloroethene	0.038 U	ppbV	0.0035	0.038	0.038 U
GRPCE-02-IA-	(Main)	Tetrachloroethene	0.52	ppbV	0.0018	0.022	0.52
GRPCE-02-IA-	(Main)	trans-1,2-Dichloroethene	0.038 U	ppbV	0.0028	0.038	0.038 U
GRPCE-02-IA-	(Main)	Trichloroethene (TCE)	0.028 U	ppbV	0.0024	0.028	0.028 U
GRPCE-02-IA-	(Main)	Vinyl Chloride	0.059 U	ppbV	0.0045	0.059	0.059 U
GRPCE-02-IA-	(Main)	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.014	0.15	0.15 U
GRPCE-02-IA-	(Main)	Tetrachloroethene	3.6	ug/m3	0.012	0.15	3.6
GRPCE-02-IA-	(Main)	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.011	0.15	0.15 U
GRPCE-02-IA-	(Main)	Trichloroethene (TCE)	0.15 U	ug/m3	0.013	0.15	0.15 U
GRPCE-02-IA-	(Main)	Vinyl Chloride	0.15 U	ug/m3	0.011	0.15	0.15 U
GRPCE-02-IA-	(Basement)	cis-1,2-Dichloroethene	0.036 U	ppbV	0.0033	0.036	0.036 U
GRPCE-02-IA-	(Basement)	Tetrachloroethene	1.1	ppbV	0.0017	0.021	1.1
GRPCE-02-IA-	(Basement)	trans-1,2-Dichloroethene	0.036 U	ppbV	0.0027	0.036	0.036 U
GRPCE-02-IA-	(Basement)	Trichloroethene (TCE)	0.027 U	ppbV	0.0023	0.027	0.027 U
GRPCE-02-IA-	(Basement)	Vinyl Chloride	0.056 U	ppbV	0.0043	0.056	0.056 U
GRPCE-02-IA-	(Basement)	cis-1,2-Dichloroethene	0.14 U	ug/m3	0.013	0.14	0.14 U
GRPCE-02-IA-	(Basement)	Tetrachloroethene	7.4	ug/m3	0.012	0.14	7.4
GRPCE-02-IA-	(Basement)	trans-1,2-Dichloroethene	0.14 U	ug/m3	0.011	0.14	0.14 U
GRPCE-02-IA-	(Basement)	Trichloroethene (TCE)	0.14 U	ug/m3	0.012	0.14	0.14 U

Samp_No		Analyte	Result Lab_Qualifier	Units	MDL	RL	Val_Result Val_Qualifier
GRPCE-02-IA-	Basement)	Vinyl Chloride	0.14 U	ug/m3	0.011	0.14	0.14 U
GRPCE-02-IA-	Main)	cis-1,2-Dichloroethene	0.039 U	ppbV	0.0036	0.039	0.039 U
GRPCE-02-IA-	Main)	Tetrachloroethene	0.79	ppbV	0.0019	0.023	0.79
GRPCE-02-IA-	Main)	trans-1,2-Dichloroethene	0.039 U	ppbV	0.0028	0.039	0.039 U
GRPCE-02-IA-	Main)	Trichloroethene (TCE)	0.029 U	ppbV	0.0024	0.029	0.029 U
GRPCE-02-IA-	Main)	Vinyl Chloride	0.06 U	ppbV	0.0046	0.06	0.06 U
GRPCE-02-IA-	Main)	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.014	0.15	0.15 U
GRPCE-02-IA-	Main)	Tetrachloroethene	5.3	ug/m3	0.013	0.15	5.3
GRPCE-02-IA-	Main)	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.011	0.15	0.15 U
GRPCE-02-IA-	Main)	Trichloroethene (TCE)	0.15 U	ug/m3	0.013	0.15	0.15 U
GRPCE-02-IA-	Main)	Vinyl Chloride	0.15 U	ug/m3	0.012	0.15	0.15 U
GRPCE-02-SS-		cis-1,2-Dichloroethene	0.72 U	ppbV	0.066	0.72	0.72 U
GRPCE-02-SS-		Tetrachloroethene	270 D	ppbV	0.11	1.4	270
GRPCE-02-SS-		trans-1,2-Dichloroethene	0.72 U	ppbV	0.052	0.72	0.72 U
GRPCE-02-SS-		Trichloroethene (TCE)	7.4	ppbV	0.045	0.53	7.4
GRPCE-02-SS-		Vinyl Chloride	1.1 U	ppbV	0.084	1.1	1.1 U
GRPCE-02-SS-		cis-1,2-Dichloroethene	2.8 U	ug/m3	0.26	2.8	2.8 U
GRPCE-02-SS-		Tetrachloroethene	1900 D	ug/m3	0.78	9.5	1900
GRPCE-02-SS-		trans-1,2-Dichloroethene	2.8 U	ug/m3	0.21	2.8	2.8 U
GRPCE-02-SS-		Trichloroethene (TCE)	40	ug/m3	0.24	2.8	40
GRPCE-02-SS-		Vinyl Chloride	2.8 U	ug/m3	0.22	2.8	2.8 U
GRPCE-02-SS-		cis-1,2-Dichloroethene	0.67 U	ppbV	0.061	0.67	0.67 U
GRPCE-02-SS-		Tetrachloroethene	130	ppbV	0.032	0.39	130
GRPCE-02-SS-		trans-1,2-Dichloroethene	0.67 U	ppbV	0.049	0.67	0.67 U
GRPCE-02-SS-		Trichloroethene (TCE)	1.6	ppbV	0.042	0.49	1.6
GRPCE-02-SS-		Vinyl Chloride	1 U	ppbV	0.079	1	1 U
GRPCE-02-SS-		cis-1,2-Dichloroethene	2.6 U	ug/m3	0.24	2.6	2.6 U
GRPCE-02-SS-		Tetrachloroethene	860	ug/m3	0.22	2.6	860
GRPCE-02-SS-		trans-1,2-Dichloroethene	2.6 U	ug/m3	0.19	2.6	2.6 U
GRPCE-02-SS-		Trichloroethene (TCE)	8.8	ug/m3	0.22	2.6	8.8
GRPCE-02-SS-		Vinyl Chloride	2.6 U	ug/m3	0.2	2.6	2.6 U
GRPCE-02-SS-		cis-1,2-Dichloroethene	0.25 U	ppbV	0.023	0.25	0.25 U
GRPCE-02-SS-		Tetrachloroethene	64	ppbV	0.012	0.15	64

Samp_No		Analyte	Result Lab_Qualifier	Units	MDL	RL	Val_Result Val_Qualifier
GRPCE-02-SS-		trans-1,2-Dichloroethene	0.25 U	ppbV	0.018	0.25	0.25 U
GRPCE-02-SS-		Trichloroethene (TCE)	0.18 U	ppbV	0.016	0.18	0.18 U
GRPCE-02-SS-		Vinyl Chloride	0.39 U	ppbV	0.03	0.39	0.39 U
GRPCE-02-SS-		cis-1,2-Dichloroethene	0.99 U	ug/m3	0.091	0.99	0.99 U
GRPCE-02-SS-		Tetrachloroethene	430	ug/m3	0.081	0.99	430
GRPCE-02-SS-		trans-1,2-Dichloroethene	0.99 U	ug/m3	0.073	0.99	0.99 U
GRPCE-02-SS-		Trichloroethene (TCE)	0.99 U	ug/m3	0.084	0.99	0.99 U
GRPCE-02-SS-		Vinyl Chloride	0.99 U	ug/m3	0.075	0.99	0.99 U
GRPCE-02-SS-		cis-1,2-Dichloroethene	0.093 U	ppbV	0.0086	0.093	0.093 U
GRPCE-02-SS-		Tetrachloroethene	23	ppbV	0.0045	0.055	23
GRPCE-02-SS-		trans-1,2-Dichloroethene	0.093 U	ppbV	0.0068	0.093	0.093 U
GRPCE-02-SS-		Trichloroethene (TCE)	0.069 U	ppbV	0.0059	0.069	0.069 U
GRPCE-02-SS-		Vinyl Chloride	0.14 U	ppbV	0.011	0.14	0.14 U
GRPCE-02-SS-		cis-1,2-Dichloroethene	0.37 U	ug/m3	0.034	0.37	0.37 U
GRPCE-02-SS-		Tetrachloroethene	160	ug/m3	0.03	0.37	160
GRPCE-02-SS-		trans-1,2-Dichloroethene	0.37 U	ug/m3	0.027	0.37	0.37 U
GRPCE-02-SS-		Trichloroethene (TCE)	0.37 U	ug/m3	0.031	0.37	0.37 U
GRPCE-02-SS-		Vinyl Chloride	0.37 U	ug/m3	0.028	0.37	0.37 U
GRPCE-07-IA-	(Basement)	cis-1,2-Dichloroethene	0.035 U	ppbV	0.0032	0.035	0.035 U
GRPCE-07-IA-	(Basement)	Tetrachloroethene	0.47	ppbV	0.0017	0.02	0.47
GRPCE-07-IA-	(Basement)	trans-1,2-Dichloroethene	0.035 U	ppbV	0.0025	0.035	0.035 U
GRPCE-07-IA-	(Basement)	Trichloroethene (TCE)	0.026 U	ppbV	0.0022	0.026	0.026 U
GRPCE-07-IA-	(Basement)	Vinyl Chloride	0.054 U	ppbV	0.0041	0.054	0.054 U
GRPCE-07-IA-	(Basement)	cis-1,2-Dichloroethene	0.14 U	ug/m3	0.013	0.14	0.14 U
GRPCE-07-IA-	(Basement)	Tetrachloroethene	3.2	ug/m3	0.011	0.14	3.2
GRPCE-07-IA-	(Basement)	trans-1,2-Dichloroethene	0.14 U	ug/m3	0.01	0.14	0.14 U
GRPCE-07-IA-	(Basement)	Trichloroethene (TCE)	0.14 U	ug/m3	0.012	0.14	0.14 U
GRPCE-07-IA-	(Basement)	Vinyl Chloride	0.14 U	ug/m3	0.01	0.14	0.14 U
GRPCE-07-IA-	(Main)	cis-1,2-Dichloroethene	0.039 U	ppbV	0.0036	0.039	0.039 U
GRPCE-07-IA-	(Main)	Tetrachloroethene	0.42	ppbV	0.0019	0.023	0.42
GRPCE-07-IA-	(Main)	trans-1,2-Dichloroethene	0.039 U	ppbV	0.0029	0.039	0.039 U
GRPCE-07-IA-	(Main)	Trichloroethene (TCE)	0.029 U	ppbV	0.0025	0.029	0.029 U
GRPCE-07-IA-	(Main)	Vinyl Chloride	0.061 U	ppbV	0.0046	0.061	0.061 U

Samp_No		Analyte	Result Lab_Qualifier	Units	MDL	RL	Val_Result Val_Qualifier
GRPCE-07-IA-	(Main)	cis-1,2-Dichloroethene	0.16 U	ug/m3	0.014	0.16	0.16 U
GRPCE-07-IA-	(Main)	Tetrachloroethene	2.9	ug/m3	0.013	0.16	2.9
GRPCE-07-IA-	(Main)	trans-1,2-Dichloroethene	0.16 U	ug/m3	0.011	0.16	0.16 U
GRPCE-07-IA-	(Main)	Trichloroethene (TCE)	0.16 U	ug/m3	0.013	0.16	0.16 U
GRPCE-07-IA-	(Main)	Vinyl Chloride	0.16 U	ug/m3	0.012	0.16	0.16 U
GRPCE-07-IA-	(Basement)	cis-1,2-Dichloroethene	0.036 U	ppbV	0.0033	0.036	0.036 U
GRPCE-07-IA-	(Basement)	Tetrachloroethene	0.39	ppbV	0.0017	0.021	0.39
GRPCE-07-IA-	(Basement)	trans-1,2-Dichloroethene	0.036 U	ppbV	0.0027	0.036	0.036 U
GRPCE-07-IA-	(Basement)	Trichloroethene (TCE)	0.027 U	ppbV	0.0023	0.027	0.027 U
GRPCE-07-IA-	(Basement)	Vinyl Chloride	0.056 U	ppbV	0.0043	0.056	0.056 U
GRPCE-07-IA-	(Basement)	cis-1,2-Dichloroethene	0.14 U	ug/m3	0.013	0.14	0.14 U
GRPCE-07-IA-	(Basement)	Tetrachloroethene	2.7	ug/m3	0.012	0.14	2.7
GRPCE-07-IA-	(Basement)	trans-1,2-Dichloroethene	0.14 U	ug/m3	0.011	0.14	0.14 U
GRPCE-07-IA-	(Basement)	Trichloroethene (TCE)	0.14 U	ug/m3	0.012	0.14	0.14 U
GRPCE-07-IA-	(Basement)	Vinyl Chloride	0.14 U	ug/m3	0.011	0.14	0.14 U
GRPCE-07-IA-	(Main)	cis-1,2-Dichloroethene	0.04 U	ppbV	0.0037	0.04	0.04 U
GRPCE-07-IA-	(Main)	Tetrachloroethene	0.38	ppbV	0.0019	0.024	0.38
GRPCE-07-IA-	(Main)	trans-1,2-Dichloroethene	0.04 U	ppbV	0.0029	0.04	0.04 U
GRPCE-07-IA-	(Main)	Trichloroethene (TCE)	0.03 U	ppbV	0.0025	0.03	0.03 U
GRPCE-07-IA-	(Main)	Vinyl Chloride	0.063 U	ppbV	0.0048	0.063	0.063 U
GRPCE-07-IA-	(Main)	cis-1,2-Dichloroethene	0.16 U	ug/m3	0.015	0.16	0.16 U
GRPCE-07-IA-	(Main)	Tetrachloroethene	2.6	ug/m3	0.013	0.16	2.6
GRPCE-07-IA-	(Main)	trans-1,2-Dichloroethene	0.16 U	ug/m3	0.012	0.16	0.16 U
GRPCE-07-IA-	(Main)	Trichloroethene (TCE)	0.16 U	ug/m3	0.014	0.16	0.16 U
GRPCE-07-IA-	(Main)	Vinyl Chloride	0.16 U	ug/m3	0.012	0.16	0.16 U

Site Name	Grand Rapids VI ER	TDD No.	COT 0001 1005 010
Document Tracking No.	1498C	TDD No.	S05-0001-1605-010
Data Reviewer (signature and date)	Jesaca A. Vickers February 16, 2017	Technical Reviewer (signature and date)	Hang N. Elis III 20 February 2017
Laboratory Report No.	P1700532	Laboratory	ALS Laboratories/Simi Valley, CA
Analyses	Volatile organic compounds (VOCs) by EPA	Method TO-15	
Samples and Matrix	16 air samples (including two field duplicat	es)	
Field Duplicate Pairs	GRPCE-07-IA- (Basement)/GI GRPCE-45-IA- GRPCE-45-I	ment)/GRPCE-07-IA- (Basement)-DP and PCE-45-IA- DP	
Field Blanks	None		

INTRODUCTION

This checklist summarizes the Stage 4 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 EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (August 2014).

OVERALL EVALUATION

No rejection of results was required for this data set. The data is usable as qualified based on the findings of this validation effort.

Data completeness:

Within Criteria	Exceedance/Notes
Υ	Sample GRPCE-02-SS-DP was erroneously identified on the chain-of-custody documentation as a field duplicate. This is the only sample submitted for this location; therefore, the "-DP" was removed from the sample identifier in the attachment to this checklist.



Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Υ	

Instrument Performance Checks:

Within Criteria	Exceedance/Notes
Y	

Initial Calibration:

Within Criteria	Exceedance/Notes
Υ	

Continuing Calibration:

Within Criteria	Exceedance/Notes
N	The percent difference for tetrachloroethene exceeded the acceptance limit; therefore, all tetrachloroethene results were qualified as estimated (J).

Calibration Verification:

Within Criteria	Exceedance/Notes
Υ	

Method blanks:

Within Criteria	Exceedance/Notes
Υ	



	EIA REGION S START CONTRACT
Field blank	s:
Within Criteria	Exceedance/Notes
NA	
Interferenc	te Check Samples (ICS) (ICP metals only):
Within Criteria	Exceedance/Notes
NA	
	nitoring compounds (surrogates and labeled compounds):
Within Criteria	Exceedance/Notes
Y	
'	
MS/MSD:	
Within Criteria	Exceedance/Notes
NA	
Post digest	ion spikes:
Within	Exceedance/Notes
Criteria	
NA	
Serial diluti	ions:
Within Criteria	Exceedance/Notes



NA

Laboratory duplicates:

Within Criteria	Exceedance/Notes
Υ	

Field duplicates:

Within Criteria	Exceedance/Notes
Υ	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Υ	

Sample dilutions:

Within Criteria		Exceedance/Notes
	1.27x: VOCs for GRPCE-03-IA-	(Basement)
	1.36x: VOCs for GRPCE-03-IA-	(Main) and GRPCE-49-OA-
	1.46x: VOCs for GRPCE-01-IA-	(Basement) and GRPCE-45-IA-
	1.48x: VOCs for GRPCE-07-IA-	(Basement)-DP
	1.49x: VOCs for GRPCE-07-IA-	(Basement) and GRPCE-45-IA-
Υ	1.51x: VOCs for GRPCE-45-IA-	DP and GRPCE-46-IA- (1)
	1.53x: VOCs for GRPCE-45-IA-	(Main) and GRPCE-46-IA- (2)
	1.69x: VOCs for GRPCE-01-IA-	(Main)
	1.95x: VOCs for GRPCE-45-IA-	(Basement)
	18.9x: VOCs for GRPCE-02-SS-	DP
	25.7x: VOCs for GRPCE-01-SS-	



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
Υ	

Target analyte identification:

Within Criteria	Exceedance/Notes
Υ	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Y	All results were either non-detect or above RL.

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	



System performance and instrument stability:

Within Criteria	Exceedance/Notes
Υ	

Other [specify]:

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.



Samp_No		Analyte	Result Lab_Qualifier	Units	MDL	RL	Val_Result Val_Qualifier
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.037 U	ppbV	0.034	0.037	0.037 U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	0.72	ppbV	0.016	0.022	0.72 J
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.037 U	ppbV	0.034	0.037	0.037 U
GRPCE-01-IA-	(Basement)	Trichloroethene (TCE)	0.027 U	ppbV	0.024	0.027	0.027 U
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.057 U	ppbV	0.054	0.057	0.057 U
GRPCE-01-IA-	(Basement)	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.13	0.15	0.15 U
GRPCE-01-IA-	(Basement)	Tetrachloroethene	4.9	ug/m3	0.11	0.15	4.9 J
GRPCE-01-IA-	(Basement)	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.13	0.15	0.15 U
GRPCE-01-IA-	(Basement)	Trichloroethene (TCE)	0.15 U	ug/m3	0.13	0.15	0.15 U
GRPCE-01-IA-	(Basement)	Vinyl Chloride	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.043 U	ppbV	0.039	0.043	0.043 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	0.46	ppbV	0.018	0.025	0.46 J
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.043 U	ppbV	0.039	0.043	0.043 U
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.031 U	ppbV	0.028	0.031	0.031 U
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.066 U	ppbV	0.063	0.066	0.066 U
GRPCE-01-IA-	(Main)	cis-1,2-Dichloroethene	0.17 U	ug/m3	0.16	0.17	0.17 U
GRPCE-01-IA-	(Main)	Tetrachloroethene	3.1	ug/m3	0.12	0.17	3.1 J
GRPCE-01-IA-	(Main)	trans-1,2-Dichloroethene	0.17 U	ug/m3	0.15	0.17	0.17 U
GRPCE-01-IA-	(Main)	Trichloroethene (TCE)	0.17 U	ug/m3	0.15	0.17	0.17 U
GRPCE-01-IA-	(Main)	Vinyl Chloride	0.17 U	ug/m3	0.16	0.17	0.17 U
GRPCE-01-SS-		cis-1,2-Dichloroethene	0.65 U	ppbV	0.6	0.65	0.65 U
GRPCE-01-SS-		Tetrachloroethene	340	ppbV	0.27	0.38	340 J
GRPCE-01-SS-		trans-1,2-Dichloroethene	0.65 U	ppbV	0.59	0.65	0.65 U
GRPCE-01-SS-		Trichloroethene (TCE)	1.7	ppbV	0.43	0.48	1.7
GRPCE-01-SS-		Vinyl Chloride	1 U	ppbV	0.95	1	1 U
GRPCE-01-SS-		cis-1,2-Dichloroethene	2.6 U	ug/m3	2.4	2.6	2.6 U
GRPCE-01-SS-		Tetrachloroethene	2300	ug/m3	1.8	2.6	2300 J
GRPCE-01-SS-		trans-1,2-Dichloroethene	2.6 U	ug/m3	2.3	2.6	2.6 U
GRPCE-01-SS-		Trichloroethene (TCE)	9.2	ug/m3	2.3	2.6	9.2
GRPCE-01-SS-		Vinyl Chloride	2.6 U	ug/m3	2.4	2.6	2.6 U
GRPCE-02-SS-		cis-1,2-Dichloroethene	0.48 U	ppbV	0.44	0.48	0.48 U
GRPCE-02-SS-		Tetrachloroethene	230	ppbV	0.2	0.28	230 J
GRPCE-02-SS-		trans-1,2-Dichloroethene	0.48 U	ppbV	0.43	0.48	0.48 U
	•						

Samp_No		Analyte	Result Lab_Qualifier	Units	MDL	RL	Val_Result Val_Qualifier
GRPCE-02-SS-		Trichloroethene (TCE)	5.5	ppbV	0.31	0.35	5.5
GRPCE-02-SS-		Vinyl Chloride	0.74 U	ppbV	0.7	0.74	0.74 U
GRPCE-02-SS-		cis-1,2-Dichloroethene	1.9 U	ug/m3	1.7	1.9	1.9 U
GRPCE-02-SS-		Tetrachloroethene	1600	ug/m3	1.4	1.9	1600 J
GRPCE-02-SS-		trans-1,2-Dichloroethene	1.9 U	ug/m3	1.7	1.9	1.9 U
GRPCE-02-SS-		Trichloroethene (TCE)	30	ug/m3	1.7	1.9	30
GRPCE-02-SS-		Vinyl Chloride	1.9 U	ug/m3	1.8	1.9	1.9 U
GRPCE-03-IA-	(Basement)	cis-1,2-Dichloroethene	0.032 U	ppbV	0.029	0.032	0.032 U
GRPCE-03-IA-	(Basement)	Tetrachloroethene	0.21	ppbV	0.013	0.019	0.21 J
GRPCE-03-IA-	(Basement)	trans-1,2-Dichloroethene	0.032 U	ppbV	0.029	0.032	0.032 U
GRPCE-03-IA-	(Basement)	Trichloroethene (TCE)	0.024 U	ppbV	0.021	0.024	0.024 U
GRPCE-03-IA-	(Basement)	Vinyl Chloride	0.05 U	ppbV	0.047	0.05	0.05 U
GRPCE-03-IA-	(Basement)	cis-1,2-Dichloroethene	0.13 U	ug/m3	0.12	0.13	0.13 U
GRPCE-03-IA-	(Basement)	Tetrachloroethene	1.4	ug/m3	0.091	0.13	1.4 J
GRPCE-03-IA-	(Basement)	trans-1,2-Dichloroethene	0.13 U	ug/m3	0.12	0.13	0.13 U
GRPCE-03-IA-	(Basement)	Trichloroethene (TCE)	0.13 U	ug/m3	0.11	0.13	0.13 U
GRPCE-03-IA-	(Basement)	Vinyl Chloride	0.13 U	ug/m3	0.12	0.13	0.13 U
GRPCE-03-IA-	(Main)	cis-1,2-Dichloroethene	0.034 U	ppbV	0.032	0.034	0.034 U
GRPCE-03-IA-	(Main)	Tetrachloroethene	0.13	ppbV	0.014	0.02	0.13 J
GRPCE-03-IA-	(Main)	trans-1,2-Dichloroethene	0.034 U	ppbV	0.031	0.034	0.034 U
GRPCE-03-IA-	(Main)	Trichloroethene (TCE)	0.025 U	ppbV	0.023	0.025	0.025 U
GRPCE-03-IA-	(Main)	Vinyl Chloride	0.053 U	ppbV	0.051	0.053	0.053 U
GRPCE-03-IA-	(Main)	cis-1,2-Dichloroethene	0.14 U	ug/m3	0.13	0.14	0.14 U
GRPCE-03-IA-	(Main)	Tetrachloroethene	0.88	ug/m3	0.098	0.14	0.88 J
GRPCE-03-IA-	(Main)	trans-1,2-Dichloroethene	0.14 U	ug/m3	0.12	0.14	0.14 U
GRPCE-03-IA-	(Main)	Trichloroethene (TCE)	0.14 U	ug/m3	0.12	0.14	0.14 U
GRPCE-03-IA-	(Main)	Vinyl Chloride	0.14 U	ug/m3	0.13	0.14	0.14 U
GRPCE-07-IA-	(Basement)	cis-1,2-Dichloroethene	0.038 U	ppbV	0.035	0.038	0.038 U
GRPCE-07-IA-	(Basement)	Tetrachloroethene	0.24	ppbV	0.016	0.022	0.24 J
GRPCE-07-IA-	(Basement)	trans-1,2-Dichloroethene	0.038 U	ppbV	0.034	0.038	0.038 U
GRPCE-07-IA-	(Basement)	Trichloroethene (TCE)	0.028 U	ppbV	0.025	0.028	0.028 U
GRPCE-07-IA-	(Basement)	Vinyl Chloride	0.058 U	ppbV	0.055	0.058	0.058 U
GRPCE-07-IA-	(Basement)	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U

Samp_No		Analyte	Result Lab_Qualifier	Units	MDL	RL	Val_Result Val_Qualifier
GRPCE-07-IA-	(Basement)	Tetrachloroethene	1.6	ug/m3	0.11	0.15	1.6 J
GRPCE-07-IA-	(Basement)	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-07-IA-	(Basement)	Trichloroethene (TCE)	0.15 U	ug/m3	0.13	0.15	0.15 U
GRPCE-07-IA-	(Basement)	Vinyl Chloride	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-07-IA-	(Basement)-DP	cis-1,2-Dichloroethene	0.037 U	ppbV	0.034	0.037	0.037 U
GRPCE-07-IA-	(Basement)-DP	Tetrachloroethene	0.24	ppbV	0.016	0.022	0.24 J
GRPCE-07-IA-	(Basement)-DP	trans-1,2-Dichloroethene	0.037 U	ppbV	0.034	0.037	0.037 U
GRPCE-07-IA-	(Basement)-DP	Trichloroethene (TCE)	0.028 U	ppbV	0.025	0.028	0.028 U
GRPCE-07-IA-	(Basement)-DP	Vinyl Chloride	0.058 U	ppbV	0.055	0.058	0.058 U
GRPCE-07-IA-	(Basement)-DP	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-07-IA-	(Basement)-DP	Tetrachloroethene	1.6	ug/m3	0.11	0.15	1.6 J
GRPCE-07-IA-	(Basement)-DP	trans-1,2-Dichloroethene	0.15 U	ug/m3	0.13	0.15	0.15 U
GRPCE-07-IA-	(Basement)-DP	Trichloroethene (TCE)	0.15 U	ug/m3	0.13	0.15	0.15 U
GRPCE-07-IA-	(Basement)-DP	Vinyl Chloride	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-45-IA-		cis-1,2-Dichloroethene	0.037 U	ppbV	0.034	0.037	0.037 U
GRPCE-45-IA-		Tetrachloroethene	0.14	ppbV	0.016	0.022	0.14 J
GRPCE-45-IA-		trans-1,2-Dichloroethene	1.3	ppbV	0.034	0.037	1.3
GRPCE-45-IA-		Trichloroethene (TCE)	0.027 U	ppbV	0.024	0.027	0.027 U
GRPCE-45-IA-		Vinyl Chloride	0.057 U	ppbV	0.054	0.057	0.057 U
GRPCE-45-IA-		cis-1,2-Dichloroethene	0.15 U	ug/m3	0.13	0.15	0.15 U
GRPCE-45-IA-		Tetrachloroethene	0.96	ug/m3	0.11	0.15	0.96 J
GRPCE-45-IA-		trans-1,2-Dichloroethene	5.1	ug/m3	0.13	0.15	5.1
GRPCE-45-IA-		Trichloroethene (TCE)	0.15 U	ug/m3	0.13	0.15	0.15 U
GRPCE-45-IA-		Vinyl Chloride	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-45-IA-	DP	cis-1,2-Dichloroethene	0.038 U	ppbV	0.035	0.038	0.038 U
GRPCE-45-IA-	DP	Tetrachloroethene	0.14	ppbV	0.016	0.022	0.14 J
GRPCE-45-IA-	DP	trans-1,2-Dichloroethene	1.3	ppbV	0.035	0.038	1.3
GRPCE-45-IA-	DP	Trichloroethene (TCE)	0.028 U	ppbV	0.025	0.028	0.028 U
GRPCE-45-IA-	DP	Vinyl Chloride	0.059 U	ppbV	0.056	0.059	0.059 U
GRPCE-45-IA-	DP	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-45-IA-	DP	Tetrachloroethene	0.97	ug/m3	0.11	0.15	0.97 J
GRPCE-45-IA-	DP	trans-1,2-Dichloroethene	5.3	ug/m3	0.14	0.15	5.3
GRPCE-45-IA-	DP	Trichloroethene (TCE)	0.15 U	ug/m3	0.13	0.15	0.15 U

Samp_No		Analyte	Result Lab_Qualifier	Units	MDL	RL	Val_Result Val_Qualifier
GRPCE-45-IA-	DP	Vinyl Chloride	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-45-IA-		cis-1,2-Dichloroethene	0.038 U	ppbV	0.035	0.038	0.038 U
GRPCE-45-IA-		Tetrachloroethene	0.12	ppbV	0.016	0.022	0.12 J
GRPCE-45-IA-		trans-1,2-Dichloroethene	1.1	ppbV	0.034	0.038	1.1
GRPCE-45-IA-		Trichloroethene (TCE)	0.028 U	ppbV	0.025	0.028	0.028 U
GRPCE-45-IA-		Vinyl Chloride	0.058 U	ppbV	0.055	0.058	0.058 U
GRPCE-45-IA-		cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-45-IA-		Tetrachloroethene	0.82	ug/m3	0.11	0.15	0.82 J
GRPCE-45-IA-		trans-1,2-Dichloroethene	4.2	ug/m3	0.14	0.15	4.2
GRPCE-45-IA-		Trichloroethene (TCE)	0.15 U	ug/m3	0.13	0.15	0.15 U
GRPCE-45-IA-		Vinyl Chloride	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-45-IA-	(Basement)	cis-1,2-Dichloroethene	0.049 U	ppbV	0.045	0.049	0.049 U
GRPCE-45-IA-	(Basement)	Tetrachloroethene	0.16	ppbV	0.021	0.029	0.16 J
GRPCE-45-IA-	(Basement)	trans-1,2-Dichloroethene	2.2	ppbV	0.045	0.049	2.2
GRPCE-45-IA-	(Basement)	Trichloroethene (TCE)	0.036 U	ppbV	0.032	0.036	0.036 U
GRPCE-45-IA-	(Basement)	Vinyl Chloride	0.076 U	ppbV	0.072	0.076	0.076 U
GRPCE-45-IA-	(Basement)	cis-1,2-Dichloroethene	0.2 U	ug/m3	0.18	0.2	0.2 U
GRPCE-45-IA-	(Basement)	Tetrachloroethene	1.1	ug/m3	0.14	0.2	1.1 J
GRPCE-45-IA-	(Basement)	trans-1,2-Dichloroethene	8.8	ug/m3	0.18	0.2	8.8
GRPCE-45-IA-	(Basement)	Trichloroethene (TCE)	0.2 U	ug/m3	0.17	0.2	0.2 U
GRPCE-45-IA-	(Basement)	Vinyl Chloride	0.2 U	ug/m3	0.19	0.2	0.2 U
GRPCE-45-IA-	(Main)	cis-1,2-Dichloroethene	0.039 U	ppbV	0.036	0.039	0.039 U
GRPCE-45-IA-	(Main)	Tetrachloroethene	0.12	ppbV	0.016	0.023	0.12 J
GRPCE-45-IA-	(Main)	trans-1,2-Dichloroethene	0.69	ppbV	0.035	0.039	0.69
GRPCE-45-IA-	(Main)	Trichloroethene (TCE)	0.028 U	ppbV	0.025	0.028	0.028 U
GRPCE-45-IA-	(Main)	Vinyl Chloride	0.06 U	ppbV	0.057	0.06	0.06 U
GRPCE-45-IA-	(Main)	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-45-IA-	(Main)	Tetrachloroethene	0.79	ug/m3	0.11	0.15	0.79 J
GRPCE-45-IA-	(Main)	trans-1,2-Dichloroethene	2.8	ug/m3	0.14	0.15	2.8
GRPCE-45-IA-	(Main)	Trichloroethene (TCE)	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-45-IA-	(Main)	Vinyl Chloride	0.15 U	ug/m3	0.15	0.15	0.15 U
GRPCE-46-IA (1)	cis-1,2-Dichloroethene	0.038 U	ppbV	0.035	0.038	0.038 U
GRPCE-46-IA (1)	Tetrachloroethene	0.067	ppbV	0.016	0.022	0.067 J
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Samp_No	Analyte	Result Lab_Qualifier	Units	MDL	RL	Val_Result Val_Qualifier
GRPCE-46-IA (1)	trans-1,2-Dichloroethene	0.11	ppbV	0.035	0.038	0.11
GRPCE-46-IA (1)	Trichloroethene (TCE)	0.028 U	ppbV	0.025	0.028	0.028 U
GRPCE-46-IA (1)	Vinyl Chloride	0.059 U	ppbV	0.056	0.059	0.059 U
GRPCE-46-IA (1)	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-46-IA (1)	Tetrachloroethene	0.45	ug/m3	0.11	0.15	0.45 J
GRPCE-46-IA (1)	trans-1,2-Dichloroethene	0.42	ug/m3	0.14	0.15	0.42
GRPCE-46-IA (1)	Trichloroethene (TCE)	0.15 U	ug/m3	0.13	0.15	0.15 U
GRPCE-46-IA (1)	Vinyl Chloride	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-46-IA (2)	cis-1,2-Dichloroethene	0.039 U	ppbV	0.036	0.039	0.039 U
GRPCE-46-IA (2)	Tetrachloroethene	0.091	ppbV	0.016	0.023	0.091 J
GRPCE-46-IA (2)	trans-1,2-Dichloroethene	0.35	ppbV	0.035	0.039	0.35
GRPCE-46-IA (2)	Trichloroethene (TCE)	0.028 U	ppbV	0.025	0.028	0.028 U
GRPCE-46-IA (2)	Vinyl Chloride	0.06 U	ppbV	0.057	0.06	0.06 U
GRPCE-46-IA (2)	cis-1,2-Dichloroethene	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-46-IA (2)	Tetrachloroethene	0.62	ug/m3	0.11	0.15	0.62 J
GRPCE-46-IA (2)	trans-1,2-Dichloroethene	1.4	ug/m3	0.14	0.15	1.4
GRPCE-46-IA (2)	Trichloroethene (TCE)	0.15 U	ug/m3	0.14	0.15	0.15 U
GRPCE-46-IA (2)	Vinyl Chloride	0.15 U	ug/m3	0.15	0.15	0.15 U
GRPCE-49-OA-	cis-1,2-Dichloroethene	0.034 U	ppbV	0.032	0.034	0.034 U
GRPCE-49-OA-	Tetrachloroethene	0.062	ppbV	0.014	0.02	0.062 J
GRPCE-49-OA-	trans-1,2-Dichloroethene	0.034 U	ppbV	0.031	0.034	0.034 U
GRPCE-49-OA-	Trichloroethene (TCE)	0.025 U	ppbV	0.023	0.025	0.025 U
GRPCE-49-OA-	Vinyl Chloride	0.053 U	ppbV	0.051	0.053	0.053 U
GRPCE-49-OA-	cis-1,2-Dichloroethene	0.14 U	ug/m3	0.13	0.14	0.14 U
GRPCE-49-OA-	Tetrachloroethene	0.42	ug/m3	0.098	0.14	0.42 J
GRPCE-49-OA-	trans-1,2-Dichloroethene	0.14 U	ug/m3	0.12	0.14	0.14 U
GRPCE-49-OA-	Trichloroethene (TCE)	0.14 U	ug/m3	0.12	0.14	0.14 U
GRPCE-49-OA-	Vinyl Chloride	0.14 U	ug/m3	0.13	0.14	0.14 U