SDG NARRATIVE

LAB NAME: CHEMTECH CONSULTING GROUP
CASE: 50299
SDG: EXFP7
CONTRACT: 68HERH20D0011
LAB CODE: CHM
CHEMTECH PROJECT: N4866
MODIFICATION REF. NUMBER: NA

Sample ID	EPA Sample ID	pH
N4866-01	EXFP7	1.0
N4866-02	EXFP8	1.0
N4866-02DL	EXFP8DL	1.0
N4866-03	EXFP9	1.0
N4866-03DL	EXFP9DL	1.0
N4866-04	EXFQ0	1.0
N4866-05	EXFQ1	1.0
N4866-05DL	EXFQ1DL	1.0
N4866-06	EXFQ2	1.0
N4866-06DL	EXFQ2DL	1.0
N4866-07MS	EXFQ2MS	1.0
N4866-08MSD	EXFQ2MSD	1.0
N4866-09	EXFQ5	1.0
N4866-09DL	EXFQ5DL	1.0
N4866-10	EXFQ6	1.0
N4866-11	EXFQ7	1.0
N4866-12	EXFQ8	1.0
N4866-14	EXFQ3	1.0
N4866-14DL	EXFQ3DL	1.0
N4866-15	EXFQ4	1.0
N4866-15DL	EXFQ4DL	1.0
N4866-16	EXFR0	1.0
N4866-16DL	EXFR0DL	1.0
N4866-17	EXFR1	1.0
N4866-17DL	EXFR1DL	1.0
N4866-18	EXFR2	1.0
N4866-18DL	EXFR2DL	1.0
N4866-19	EXFR3	1.0
N4866-19DL	EXFR3DL	1.0
N4866-20	EXFR4	1.0
N4866-20DL	EXFR4DL	1.0

N4866-21	EXFR5	1.0
N4866-22	EXFR6	1.0
N4866-23	EXFR7	1.0
N4866-23DL	EXFR7DL	1.0

12 Water sample was delivered to the laboratory intact on 09/28/2022.
10 Water sample was delivered to the laboratory intact on 09/29/2022.

Test requested on the Chain of Custody was Trace-Volatile Organic by Method SFAM01.1.

The temperature of the samples was measured using an I R Gun. The samples temperature was 1.9 degree Celsius for the samples received on 09/28/2022, 3.1 degree Celsius for the samples received on 09/29/2022.
Issue 1: Airbill is missing from the COC.

Resolution 1: In accordance with previous direction from Region 5, the laboratory will note the discrepancy in the SDG Narrative and proceed with the analysis of the samples. The resolution will be applied to all COCs received for this Case.

Issue 2: Lab: "Lab is sending this email with regards to case 50299 and SDG EXFP7.

Lab has received water samples for TVOA analysis. Lab has analyzed samples EXFR0, EXFR1, EXFR2 & EXFR3 in a continuous analytical sequence. All samples are found positive with high concentration of target analytes detected and required dilution analysis as you can see attached quant reports. Due to continuous analytical sequence, instrument blank was not analyzed in between the samples therefore lab would like to confirm that lab will report undiluted TVOA analysis without instrument blank in between and further dilution analysis in electronic deliverables.

Based on the above analysis, Lab has screened the sample EXFQ6 for TVOA analysis and sample found positive with extremely high concentration of target analytes detected. Based on screening data, Lab has analyzed TVOA analysis with most plausible dilution factor 200x as you can see attached quant report therefore lab would like to confirm that lab will report 200x dilution analysis as final analysis for electronic deliverables.

Lab has analyzed undiluted TVOA analysis for the samples EXFQ1 & EXFQ5. It was observed that samples had foamy nature during purging mode and also samples are having high concentration of target analytes and required dilution to bring analytes within calibration range. Due to foamy nature of the samples, we have surrogates and internal standard recovery outside the QC limits therefore lab would like to confirm that lab will report undiluted TVOA analysis with internal and surrogate recovery failure as first analysis and further dilution analysis in electronic deliverables.

SMO Input:

- It appears the laboratory followed the SFAM01.1 SOW guidance described in Exhibit D, Sections 11.3.8, 11.4.5, and 10.2.13 - Sample dilution. The laboratory is expected to follow the SOW guidance described in Exhibit D, Section 11.4.4.2/Note (shown below).

NOTE: If the internal standard and/or DMC performance issue appears to be caused by the presence of high levels of target analytes (i.e., above the highest calibration standard), the Contractor may analyze the sample at an appropriate dilution factor (nominally 2-10) after the initial analysis that did not meet the criteria (without first reanalyzing the undiluted sample). However, if no target analytes are measured in the upper half of the calibration range in the diluted sample, the Contractor must proceed with reanalysis of the undiluted sample.

Resolution 2: Region: "…please document all issues in the case narrative and have the lab proceed as proposed."

Trace Volatiles:

The analysis performed on instrument MSVOA_V were done using GC column DB-624UI 20m 0.18mm 1.0 um. Cat#121-1324UI.
The analysis performed on instrument MSVOA_U were done using GC column DB-624UI 20m 0.18mm 1.0 um. Cat#121-1324UI.

The analysis of VOC-TRACE-SFAM was based on method SFAM01.1_Trace.

The Holding Times were met for all analysis.

The Surrogate recoveries met the acceptable criteria except for,
EXFP7 [1,1-Dichloroethene-d2 - 55%],
EXFP8 [1,1-Dichloroethene-d2 - 41%, Toluene-d8 - 66%],
EXFP9 [1,1-Dichloroethene-d2 - 53%, Toluene-d8 - 66%],
EXFP9DL [1,1-Dichloroethene-d2 - 56%],
EXFQ0 [1,1-Dichloroethene-d2 - 58%],
EXFQ1 [1,1,2,2-Tetrachloroethane-d2 - 162%, 1,2-Dichloroethane-d4 - 134%, 2-Butanone-d5 - 236%, 2-Hexanone-d5 - 188%],
EXFQ2 [2-Butanone-d5 - 139%, Toluene-d8 - 65%, Vinyl Chloride-d3 - 598%],
EXFQ2MS [1,1,2,2-Tetrachloroethane-d2 - 148%, 2-Butanone-d5 - 192%, 2-Hexanone-d5 - 160%, Vinyl Chloride-d3 - 658%],
EXFQ2MSD [1,1,2,2-Tetrachloroethane-d2 - 138%, 2-Butanone-d5 - 173%, 2-Hexanone-d5 - 147%, Vinyl Chloride-d3 - 673%],
EXFQ5 [1,1,2,2-Tetrachloroethane-d2 - 151%, 1,1-Dichloroethene-d2 - 58%, 2-Butanone-d5 - 232%, 2-Hexanone-d5 - 179%],
EXFQ7 [1,1-Dichloroethene-d2 - 53%, Toluene-d8 - 70%],
EXFQ8 [1,1-Dichloroethene-d2 - 51%, Toluene-d8 - 66%],
EXFQ3 [2-Butanone-d5 - 131%],

EXFQ3DL [1,1-Dichloroethene-d2 - 40%, Chloroethane-d5 - 63%, Toluene-d8 - 58%],
EXFQ4DL [1,1-Dichloroethene-d2 - 47%, Toluene-d8 - 68%],
EXFR1DL [1,2-Dichlorobenzene-d4 - 121%],
EXFR2 [Vinyl Chloride-d3 - 147%],
EXFR3DL [1,1-Dichloroethene-d2 - 58%],
EXFR4 [Vinyl Chloride-d3 - 145%],
EXFR5 [1,1-Dichloroethene-d2 - 52%, 2-Butanone-d5 - 160%, Toluene-d8 - 65%],
EXFR7DL [1,1-Dichloroethene-d2 - 42%, 2-Butanone-d5 - 133% and Toluene-d8 - 59%],
As per method up to three surrogates are allowed to fail. No corrective action was taken except for Sample EXFQ2MS and EXFQ2MSD failed for more than three surrogates, which is not required the corrective action for failing Surrogate recoveries in MS/MSD. These Samples EXFQ1 and EXFQ5 failed more than 3 surrogates due to foamy nature during purging mode. The Samples found positive with extremely high concentration of target analytes and required dilution analysis, Due to foamy nature of the samples surrogates recovery outside the QC limits therefore, samples EXFQ1 and EXFQ5 were reanalyzed at a dilution and reported. Please see EPA communication after SDG Narrative

The Internal Standards Areas met the acceptable requirements except for EXFQ5 which failed for Internal Standards. The Samples found positive with extremely high concentration of target analytes and required dilution analysis, Due to foamy nature of the sample, Internal Standard recovery outside the QC limits As a corrective action sample was reanalyzed and reported. Please see EPA communication after SDG Narrative.

Instrument Performance Check met requirements.
The Retention Times met requirements.
The Tuning criteria met requirements.

The MS {EXFQ2MS} recoveries met the requirements for all compounds except for 1,1-Dichloroethene [60%],As per sow Exhibit-D Section 12.2.5.4, The percent recovery limits for the spiking analyses listed in Exhibit D – Trace VOA, Table 11 are advisory, therefore no further corrective action is required.

The MSD {EXFQ2MSD} recoveries met the requirements for all compounds except for 1,1-Dichloroethene [60%],As per sow Exhibit-D Section 12.2.5.4, The percent recovery limits for the spiking analyses listed in Exhibit D – Trace VOA, Table 11 are advisory, therefore no further corrective action is required.

The RPD { EXFQ2MSD} met the requirements for all compounds.

The %RSD met requirement for initial Calibration except for Chloromethane (39.8%) and cis-1,2-Dichloroethene (23.3%) for the initial calibration dated 09/22/2022 with V instrument, As per method, the %RSD up to two Compounds are allowed to fail to meet the minimum criteria as long as the compound meets the maximum of 40% RSD. No further corrective action was taken.

The Continuing Calibration (VSTD005166) file ID VU051243.D met the requirements except for Methylcyclohexane (-32.1%). As per method, up to two target analyte in opening and closing CCV are allowed to exceed the %D values. Therefore no further corrective action was taken.

The Continuing Calibration (VSTD005310) file ID VV028192.D met the requirements except for Chloromethane (-37.5%). As per method, up to two target analyte in opening and closing CCV are allowed to exceed the %D values. Therefore no further corrective action was taken.

The Continuing Calibration (VSTD005312) file ID VV028218.D met the requirements except for Chloromethane (-38.2%). As per method, up to two target analyte in opening and closing CCV are allowed to exceed the %D values. Therefore no further corrective action was taken.

The Continuing Calibration (VSTD005313) file ID VV028241.D met the requirements except for Chloromethane (-39.4%) and 1,2-Dichloropropane-d6 (-22.8%). As per method, up to two target analyte in opening and closing CCV are allowed to exceed the %D values. Therefore no further corrective action was taken.

The Blank analysis indicated presence of Methylene chloride [0.39ug/L] FileID: VU051220.D (VBLK106) {VU1007WBL01} due to possible lab contamination. As per method, less than 2 times the respective CRQL is allowed to fail for Methylene chloride. Therefore no further corrective action was taken.

The Blank analysis indicated presence of Methylene chloride [0.27ug/L] FileID: VV028176.D (VBLK238) {VV0929WBL01} due to possible lab contamination. As per method, less than 2 times the respective CRQL is allowed to fail for Methylene chloride. Therefore no further corrective action was taken.

The Blank analysis indicated presence of Methylene chloride [0.64ug/L] FileID: VV028242.D (VBLK247) {VV0930WBL03} due to possible lab contamination. As per method, less than 2 times the respective CRQL is allowed to fail for Methylene chloride. Therefore no further corrective action was taken.

The Blank analysis indicated presence of Methylene chloride [0.43ug/L] FileID: VV028293.D (VBLK243) {VV1003WBL02} due to possible lab contamination. As per method, less than 2 times the respective CRQL is allowed to fail for Methylene chloride. Therefore no further corrective action was taken.

The Blank analysis indicated presence of Methylene chloride [0.21ug/L] FileID: VV028317.D (VBLK244) {VV1004WBL01} due to possible lab contamination. As per method, less than 2 times the respective CRQL is allowed to fail for Methylene chloride. Therefore no further corrective action was taken.

The Blank analysis indicated presence of Methylene chloride [0.24ug/L] FileID: VV028334.D (VBLK245) {VV1004WBL02} due to possible lab contamination. As per method, less than 2 times the respective CRQL is allowed to fail for Methylene chloride. Therefore no further corrective action was taken.

The Blank analysis indicated presence of Methylene chloride [0.28ug/L] FileID: VV028360.D (VBLK248) {VV1005WBL01} due to possible lab contamination. As per method, less than 2 times the respective CRQL is allowed to fail for Methylene chloride. Therefore no further corrective action was taken.

The storage blank analysis indicated presence of Methylene chloride [0.34ug /L] FileID: VU051221.D (VHBLK001) due to possible lab contamination. As per method, less than 2 times the respective CRQL is allowed to fail for Methylene chloride. Therefore no further corrective action was taken.

Samples EXFP8, EXFP9, EXFQ1, EXFQ2, EXFQ5, EXFQ3, EXFQ4, EXFR0, EXFR1, EXFR2, EXFR3, EXFR4 and EXFR7 were diluted due to high concentrations.

The sample EXFP9 was analyzed following the analysis of EXFP8. Both samples had common hit of compound with concentration above calibration levels for Vinyl chloride, It was reanalyzed at a diluted. As per method, no instrument blank was required and not analyzed.

The sample EXFQ4 was analyzed following the analysis of EXFQ3. Sample EXFQ3 had hit of compounds cis-1,2-Dichloroethene, Trichloroethene and Tetrachloroethene with concentration above calibration levels. Sample EXFQ4 had concentration of compound cis-1,2-Dichloroethene which is Required dilution,and Compound Tetrachloroethene which is below CRQL and compound Trichloroethenewhich is not detected. Therefore, as per method no instrument blank was required.

The sample EXFR0 was analyzed following the analysis of EXFQ4. Both samples had common hit of compound with concentration above calibration levels for Vinyl chloride and cis-1,2-Dichloroethene, It was reanalyzed at a diluted. As per method, no instrument blank was required and not analyzed.

The Samples EXFR0, EXFR1, EXFR2 and EXFR3 were analyzed back to back in an continuous analytical sequence and samples found positive with high concentration of target analytes are detected and required dilution. However, instrument blanks were not analyzed in between them per SOW due to samples are analyzed in continuous analytical sequence, so Lab has reported both the analysis as undiluted analysis without instrument blanks and further dilution analysis. Please see EPA communication after SDG Narrative.

The sample EXFR4 was analyzed following the analysis of EXFR3. Samples EXFR3 had hit of compound Benzene with concentration above calibration levels. Sample Benzene had Concentration of Compound Benzene which is below CRQL. Therefore, as per method no instrument blank was required.

The sample EXFQ5 was analyzed following the analysis of EXFQ1. Both samples had common hit of compound with concentration above calibration levels for Vinyl chloride and cis-1,2-Dichloroethene, It was reanalyzed at a diluted. As per method, no instrument blank was required and not analyzed.

Samples are expected to have high concentration of target analytes therefore as a precautionary step, Lab has analyzed undiluted sample EXFQ6 with most plausible dilution factor 200x ,as a first analysis due to found positive with high concentration of target analytes detected . Lab notified this issue to region. Please see EPA communication after SDG Narrative.

See **Manual Integration report** for the manual integration information at the end of the case narrative.

Calculation:

Concentration in ug/L = $\frac{(Ax)\ (Is)\ (DF)}{(Ais)\ (RRF)\ (Vo)}$

Where,
Ax = Area of the characteristic ion (EICP) for the compound to be measured.
Ais = Area of the characteristic ion (EICP) for the internal standard.
Is = Amount of internal standard added in ng.
RRF = Mean Relative Response Factor from the initial calibration standard.

Vo = Total volume of water purged, in mL.
DF = Dilution Factor.

Example Calculation for sample **EXFP8** for **trans-1,2-Dichloroethene**:

Ax = 7112
Is = 125
RRF= 0.302
DF = 1
Ais = 171835
Vo. = 25

Concentration in ug/L = $\frac{(7112)\ (125)\ (1)}{(171835)\ (0.302)\ (25)}$

Reported Result = 0.68 ug/L

Relative Response Factor = **Dichlorodifluoromethane**: RUN **VV092222** for **0.5** ppb

RRF = $\frac{\text{Area of compound}}{\text{Area of Internal Standard}}$ X $\frac{\text{Conc. of Internal Standard}}{\text{Conc. of Compound}}$

RRF = $\frac{6284}{186296}$ X $\frac{5.0}{0.5}$

RRF= 0.337

I certify that the data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. The laboratory manager or his designee, as verified by the following signature has authorized release of the data contained in this hard copy data package.

Signature _____ Name: Nimisha Pandya.

Date: _____ Title: Document Control Officer.