SDG NARRATIVE

LAB NAME: CHEMTECH CONSULTING GROUP
CASE: 49673
SDG: C00T9
CONTRACT: 68HERH20D0011
LAB CODE: CHM
CHEMTECH PROJECT: M4030
MODIFICATION REF. NUMBER: NA

Sample ID	EPA Sample ID	Test	pH
M4030-01	C00Q5		
M4030-02MS	C00Q5MS		
M4030-03MSD	C00Q5MSD		
M4030-04	C00T9		
M4030-05	C00U0		
M4030-06	C00U5		
M4030-07	C00U6		
M4030-08	C00U7		
M4030-08DL	C00U7DL	SVOC-SIM	

3 Soil samples were delivered to the laboratory intact on 10/01/2021.
8 Soil samples were delivered to the laboratory intact on 10/06/2021.

Test requested on the Chain of Custody was Semivolatile Organic, Semivolatile Organic-SIM and Pesticide by Method SFAM01.1.

Sample Tags were not received with the samples.

The temperature of the samples was measured using an I R Gun. The samples temperature was 2.7 degree Celsius for the samples received on 10/01/2021, 4.8 degree Celsius for the samples received on 10/06/2021.

Shipping Discrepancies and/or QC issues:
Issue 1: Sample tags were not received with samples at the laboratory. Sample tag numbers may or may not be listed on the TR/COC.

Resolutions 1: The laboratory will note the samples with the missing tags in the SDG Narrative and proceed with the analysis of the samples. The resolution will be applied to all samples received for this Case.

Issue 2: The attached COC received on 10/6/2021 was missing the relinquished time, date, and signature.

Resolution 2: Per Region 3, the sampler has been requested to provide corrected COCs. Once received the laboratory will make note of the issue in their SDG Narrative, proceed with the analysis of the samples and include all received COCs when submitting their Data Package.

Issue 3: The laboratory received samples on 9/30/2021, and the COC included with the shipment does not list a relinquished time, date, or signature.

Resolution 3: Per Region 3, the laboratory will include the attached updated COCs and include all received COCs for Case 49673 when submitting the Data Packages. Please note the issue in the SDG Narrative and proceed with the analysis of the samples.

Semivolatiles :

The samples were analyzed on instrument BNA_P using GC Column ZB-GR Semi Volatiles Guardian which is 30 meters, 0.25 mm ID, 0.5 um df, Catalog # 7HG-G027-17-GGA.

Semis volatile Organic sample for Soil was extracted by Method SFAM01.1 on 10/09/2021, The analysis of SVOC-SFAM was based on method SFAM01.1.

The Holding Times were met for all analysis.
The Surrogate recoveries met the acceptable criteria.
The Internal Standards Areas met the acceptable requirements.
The Retention Times were acceptable for all samples.
The Blank Spike for {PB139790BS} recoveries met the requirements for all compounds.
The Blank analysis did not indicate the presence of lab contamination.
The Tuning criteria met requirements.
The Initial Calibration met the acceptable requirements.
The Continuous Calibration met the acceptable requirements.

The Samples C00T9 and C00U7 have the concentration of target compound below Method detection limits; therefore it is not reported as Hit in Form1.

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

Concentration of SOIL Sample:

Concentration ug/Kg,

$$\text{(dry weight basis)} = \frac{(Ax)\,(Is)\,(Vt)\,(DF)\,(GPC)}{(Ais)\,(\overline{RRF})\,(Vi)\,(Wt)\,(D)}$$

Where,
Ax = Area of the characteristic ion for the compound to be measured.
Ais = Area of the characteristic ion for the internal standard.
Is = Amount of internal standard injected in ng.
Vi = Volume of extract injected in microliters (uL)

Vt = Volume of concentrated extract in microliters (uL)
Wt = Weight of the original sample extracted in g
Df = Dilution factor

RRF = Mean Relative Response Factor determined from the initial calibration standard.
GPC = Vin = GPC factor (If no GPC is performed, GPC=1)
Vout = Volume of extract collected after GPC cleanup.
D = % dry weight or $\frac{100 - \%Moisture}{100}$

Example calculation of C00U0 for Pyrene.

Ax = 68873
Ais = 891293
Is = 20
Vi = 1
Vt = 500
Wt = 30.1
Df = 1
RRF = 1.251
GPC = 2
D= 0.749

Concentration

(dry weight basis) ug/Kg = $\frac{(68873)\ (20)\ (500)\ (1)\ (2)}{(891293)\ (1.251)\ (1)\ (30.1)\ (0.749)}$

= 55 ug/Kg

RRF Calculation of standard 20 ppb for Naphthalene with P instrument for method 10/14/2021.

RRF= Area of compound / Area of Internal Standard X Conc. of Internal Standard / Conc. of Compound

= 907568/853401 X 20/20

= 1.063 (Reported RRF)

Semivolatiles SIM.

The samples were analyzed on instrument BNA_M using GC Column ZB-GR Semi Volatiles Guardian which is 30 meters, 0.25 mm ID, 0.5 um df, Catalog # 7HG-G027-17-GGA.

Semis volatile Organic sample for Soil was extracted by Method SFAM01.1 on 10/09/2021, The analysis of SVOC-SIM-SFAM was based on method SFAM01.1.

The Holding Times were met for all analysis.
The Surrogate recoveries met the acceptable criteria except for,
C00U7DL [Fluoranthene-d10 - 26%]. The DMC recovery requirements do not apply to samples that have been diluted.
The Internal Standards Areas met the acceptable requirements.
The Retention Times were acceptable for all samples.
The Blank Spike for {PB139791BS} recoveries met the requirements for all compounds.
The Blank analysis did not indicate the presence of lab contamination.
The Tuning criteria met requirements.
The Initial Calibration met the acceptable requirements.
The Continuous Calibration met the acceptable requirements.

Samples C00U7 was diluted due to high concentrations.

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

Concentration of SOIL Sample:

Concentration ug/Kg,

$$\text{(dry weight basis)} = \frac{(Ax)\,(Is)\,(Vt)\,(DF)\,(GPC)}{(Ais)\,(\overline{RRF})\,(Vi)\,(Wt)\,(D)}$$

Where,
Ax = Area of the characteristic ion for the compound to be measured.
Ais = Area of the characteristic ion for the internal standard.
Is = Amount of internal standard injected in ng.
Vi = Volume of extract injected in microliters (uL)
Vt = Volume of concentrated extract in microliters (uL)
Wt = Weight of the original sample extracted in g
Df = Dilution factor

$\overline{RRF}$ = Mean Relative Response Factor determined from the initial calibration standard.
GPC = $\frac{Vin}{Vout}$ = GPC factor (If no GPC is performed, GPC=1)
Vout = Volume of extract collected after GPC cleanup.

$$D = \%\text{ dry weight or } \frac{100 - \%Moisture}{100}$$

Example calculation of C00T9 for Pyrene.

Ax = 45495
Ais = 9553
Is = 0.4
Vi = 1
Vt = 500
Wt = 30.1

Df = 1
RRF = 2.035
GPC = 2
D= 0.707

Concentration

(dry weight basis) ug/Kg = $\frac{(45495)\ (0.4)\ (500)\ (1)\ (2)}{(9553)\ (2.035)\ (1)\ (30.1)\ (0.707)}$

= 44 ug/Kg

RRF Calculation of standard 20 ppb for Naphthalene with M instrument for method 10/14/2021.

RRF= Area of compound / Area of Internal Standard X Conc. of Internal Standard / Conc. of Compound

= 14702/12171 X 0.4/0.4

= 1.208 (Reported RRF)

Pesticides:
The analyses for Pesticides were performed on instrument ECD D. The front column is ZB-Multi-Residue-2 which is 30 meters, 0.32 mm ID, 0.2 um df. The rear column ZB-Multi-Residue-1 which is 30 meters, 0.32 mm ID, 0.50 um df.

The sample was analyzed on a single injection dual column system. To distinguish the second column analysis from the first column a -2 suffix was added to the file id on the form 1. These refer to forms were both columns are reported. Form 1s for the IBLK and ALCS are referenced as IBLK(1)/IBLK(2), MS(1)/MS(2), MSD(1)/MSD(2) and PLCS01(1)/PLCS01(2) respectively.

Pesticide sample was extracted by method SFAM01.1 on 10/09/2021 and analyzed on 10/13, 10/14/2021. The sample was extracted and analyzed within contractual holding time.

The soil sample was subjected to Florisil and GPC Cleanup.
The Surrogate recoveries met the acceptable criteria.
C00Q5MS met the requirements.
C00Q5MSD met the requirements.
The RPD met the requirements.
The Blank analysis did not indicate the presence of lab contamination.
Blank and Laboratory Control Sample met the requirements.
Retention Times met the requirements.
Florisil check met the requirements.
Resolution Check met the requirements.
The Retention Times were acceptable for all samples.

The %RSD met requirement for initial Calibration except for beta-BHC (28.44%) in first column for the initial calibration dated 10/13/2021 with ECD_D instrument. (Please See Section 9.3.5.9 of Exhibit D Pesticide Analysis).
The Individual Mix A met the requirements.
The Individual Mix B met the requirements.
The PEM met the requirement.

Samples C00Q5MS, C00Q5MSD, C00T9, C00U6 and C00U7 failed to meet the %D for the results between the two columns Criteria.

Sample C00U0 have the concentration of target compound# Endrin, 4,4'-DDD below Method detection limits, therefore it is not reported as hit in Form1.

Sample C00T9, C00U0, C00U5 have the concentration of target compound# gamma-BHC (Lindane) below Method detection limits in first column, therefore %D for the results between the two columns not reported.

Calculation for the Concentration in Soil Samples

$$\text{Concentration ug/Kg (Dry weight basis)} = \frac{(Ax)\,(Vt)\,(DF)\,(GPC)}{(CF)\,(Vi)\,(Ws)\,(D)}$$

Where,
Ax = Response (peak area or height) of the compound to be measured.
CF = Mean Calibration Factor from the initial calibration (area/ng).
Vt = Volume of the concentrated extract in uL
Vi = Volume of extract injected (uL). (If a single injection is made onto two columns, use ½ the volume in the syringe as the volume injected onto each column).
Ws = Weight of sample extracted (g).

$D = \%\text{ dry weight or } \frac{100 - \%\text{Moisture}}{100}$

$GPC = \frac{Vin}{Vout}$ = GPC factor (If no GPC is performed, GPC=1)

DF = Dilution Factor.

Example of Dieldrin calculation
Calibration Factor Calculation Dieldrin in the first column

$$\text{Calibration factor (CF)} = \frac{\text{peak area}}{\text{Mass injected in ng}}$$

$$= \frac{24686955}{10\text{ng}}$$

$$= 2468700$$

Mean Calibration Factor = average of 5 point calibration factor

= 2569740

Sample **C00U6**
Ax = 40051304
CF = 2569740
Ws =30.1
Vi = 1.0
Vt = 5000
DF = 1.0
GPC = 2.0
D = 0.497

$$\text{Concentration ug/Kg (Dry weight basis)} = \frac{(Ax)\,(Vt)\,(DF)\,(GPC)}{(CF)\,(Vi)\,(Ws)\,(D)}$$

$$= \frac{(40051304)\,(5000)\,(1.0)\,(2.0)}{(2569740)(1.0)(30.1)(0.497)}$$

$$= 10.418$$

Reported Results = 10 ug/kg

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.