![](_page_0_Picture_0.jpeg)

#### **SDG NARRATIVE**

LAB NAME: CHEMTECH CONSULTING GROUP CASE: 49332 SDG: X3163 CONTRACT: 68HERH20D0011 LAB CODE: CHM CHEMTECH PROJECT: M1496 MODIFICATION REF. NUMBER: NA

Sample ID	EPA Sample ID	Test	pН
M1496-01	X3163		
M1496-02	X3164		
M1496-03	X3165		
M1496-04	X3166		
M1496-05	X3167		
M1496-06	X3168		
M1496-07	X3169		
M1496-08	X3170		
M1496-09	X3171		
M1496-10	X3172		
M1496-11	X3173		
M1496-11DL	X3173DL	PCB	

06 Water samples were delivered to the laboratory intact on 02/25/2021. 05 soil samples were delivered to the laboratory intact on 02/25/2021.

Test requested on the Chain of Custody was Trace Volatile Organic, Volatile Organic, Semivolatile Organic, Semivolatile Organic-SIM, Pesticide, and Aroclor 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 11.3 degree Celsius for the samples received on 02/25/2021.

#### 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.

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# CHEIMITECH

### **Trace Volatiles:**

The analysis performed on instrument MSVOA\_U were done using GC column DB-624UI 20m 0.18mm 1.0 um. Cat#121-1324UI. The Trap was supplied by OI Analytical, OI #10 Trap, OI Eclipse 4660 Concentrator.

The analysis of VOCMS Group2 was based on method SFAM01.1\_Trace.

The Holding Times were met for all analysis.

The Surrogate recoveries met the acceptable criteria.

The Retention Times met requirements.

The Internal Standards Areas met the acceptable requirements.

Instrument Performance Check met requirements.

The Tuning criteria met requirements.

The initial Calibration met requirements.

The Continuing Calibration met the requirements.

The Blank analysis indicated presence of Methylene chloride [0.20ug/L] FileID:VU042461.D (VBLK362) {VU0301WBL01} 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.

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

### **Calculation:**

Concentration in ug/L = (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 X3163 for Vinyl chloride:

Ax = 31045 Is = 125 RRF= 0.435 DF = 1 Ais = 102740 Vo. = 25 Concentration in ug/L =  $\frac{(31045)(125)(1)}{(102740)(0.435)(25)}$ 

= 3.47 ug/L

![](_page_2_Picture_0.jpeg)

Reported Result = 3.5ug/L

### Relative Response Factor = Dichlorodifluoromethane: RUN VU030121 for 0.5 ppb

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

 $RRF = \underline{4168}_{109589} X \underline{5.0}_{0.5}$ 

RRF = 0.380

#### Low Volatiles:

The analysis performed on instrument MSVOA\_W were done using GC column RXI-624SIL MS 30m 0.25mm 1.4 um. Cat#13868. The analysis of VOCMS Group1 was based on method SFAM01.1\_LOW.

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

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

### Calculation: Low/Med Level Soil/Sediment Calculation

Concentration in ug/Kg dry Weight basis) =  $\frac{(A_x)(I_s)(D_f)}{(Ais)(RRF)(Ws)(D)}$ 

Where,

Ax = Area for the compound to be measured Ais = Area for the specific internal standard Is = Amount of internal standard added in Nano grams (ng) RRF = Relative response factor of the calibration standard. Df = Dilution factor Ws= Weight of sample

D=<u>100 - %moisture</u> 100

### Calculation for sample X3169 for Dichlorodifluoromethane

Ax= 65935 Is = 250RRF= 0.297 DF=1 Ais= 451798 Ws=5D= 1

Concentration in ug/KG =(65935) (250) (1) (451798)(0.297)(5)(1)

= 24.6 ug/Kg

Reported Results: = 25 ug/Kg

Relative Response Factor = Dichlorodifluoromethane: RUN VW022321 for 2.5 ppb

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

RRF= 12996 X 25 432360 2.5

RRF= 0.301

### **Trace Volatiles\_SIM:**

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-SIM was based on method SFAM01.1\_VOCSIM

The Holding Times were met for all analysis.

The Surrogate recoveries met the acceptable criteria.

The Retention Times met requirements.

The Internal Standards Areas met the acceptable requirements.

Instrument Performance Check met requirements.

The Tuning criteria met requirements.

The initial Calibration met requirements.

The Continuing Calibration met the requirements.

The Blank analysis did not indicate the presence of lab contamination.

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

![](_page_4_Picture_0.jpeg)

**Calculation:** 

Concentration in ug/L = (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 X3164 for Vinyl chloride:

Ax = 657 Is = 12.5 RRF= 0.408 DF = 1 Ais = 3878 Vo. = 25 Concentration in ug/L =  $\frac{(657)(12.5)(1)}{(3878)(0.408)(25)}$ = 0.21ug/L Reported Result = 0.21ug/L Relative Response Factor = Vinyl chloride: RUN VU022521 for 0.05 ppb RRF = <u>Area of compound</u> X <u>Conc. of Internal Standard</u> Area of Internal Standard Conc. of Compound RRF =  $\frac{160}{4194}$  X  $\frac{0.5}{0.05}$ 

RRF = 0.381

## Semivolatiles :

The samples were analyzed on instrument BNA\_G 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.

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.

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Semis volatile Organic sample for Soil was extracted by Method SFAM01.1 on 03/04/2021 & water sample was extracted by Method SFAM01.1 on 03/04/2021. The analysis of SVOC was based on method SFAM01.1\_SVOC.

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 {PB134982BS} recoveries met the requirements for all compounds. The Blank Spike for {PB134984BS} recoveries met the requirements for all compounds. The Blank analysis did not indicate the presence of lab contamination. The Initial Calibration met the requirements. The Tuning criteria met requirements. The Continuous Calibration met the requirements.

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

## **Concentration of Water Sample:**

Concentration ug/L = (Ax) (Is) (Vt) (DF) (GPC)

$$(Ais)$$
  $(RRF)$   $(Vo)$   $(Vi)$ 

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.

Vo = Volume of water extracted in mL.

Vi = Volume of extract injected in uL.

Vt = Volume of the concentrated extract in uL

RRF = Mean Relative Response Factor determined from the initial calibration standard.

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

Vout = Volume of extract collected after GPC cleanup.

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

## **Concentration of SOIL Sample:**

Concentration ug/Kg, (dry weight basis) = (Ax) (Is) (Vt) (DF) (GPC)

(Ais) (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.  $GPC = \frac{Vin}{Vout} = GPC factor (If no GPC is performed, GPC=1)$ Vout = Volume of extract collected after GPC cleanup.

### Example calculation of X3170 for Nitrobenzene:

Ax = 71608 Ais = 160413 Is = 20 Vi = 1 Vt = 500 Wt = 30.3 Df = 1 RRF = 0.457 GPC = 2 D=1

Concentration

(dry weight basis) ug/Kg = (71608) (20) (500) (1) (2)

(160413) (0.457) (1) (30.3) (1)

= 650 ug/Kg

RRF Calculation of standard 20 ppb for Naphthalene with G instrument for method 03/11/2021

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

= 195713/ 204489 X 20/20

= 0.957 (Reported RRF)

# **Semivolatiles SIM:**

The samples were analyzed on instrument BNA\_N 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 samples for Soil were extracted by Method SFAM01.1 on 03/04/21 & Water sample was extracted by Method SFAM01.1 on 03/04/21. The analysis of SVOC was based on method SFAM01.1\_SIM.

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 {PB134983BS} recoveries met the requirements for all compounds. The Blank Spike for {PB134986BS} recoveries met the requirements for all compounds. The Blank analysis did not indicate the presence of lab contamination. The Initial Calibration met the requirements. The Continuous Calibration met the requirements. The Tuning criteria met requirements.

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

### **Concentration of Water Sample:**

Concentration ug/L = (Ax) (Is) (Vt) (DF) (GPC)

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.

Vo = Volume of water extracted in mL.

Vi = Volume of extract injected in uL.

Vt = Volume of the concentrated extract in uL

RRF = Mean Relative Response Factor determined from the initial calibration standard.

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

Vout = Volume of extract collected after GPC cleanup.

D = % dry weight or <u>100 - % Moisture</u> 100

### **Concentration of SOIL Sample:**

Concentration ug/Kg, (dry weight basis) = (Ax) (Is) (Vt) (DF) (GPC)

$$(Ais) (R\overline{RF}) (Vi) (Wt) (D)$$

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

Vout = Volume of extract collected after GPC cleanup.

Example calculation of X3171 for Naphthalene:

Ax = 24551Ais = 14508 Is = 0.4 Vi = 1 Vt = 500 Wt = 30.1 Df = 1 RRF = 1.165 GPC = 2 D=1

Concentration

(dry weight basis) ug/Kg = (24551) (0.4) (500) (1) (2)(14508) (1.165) (1) (30.1) (1)

= 19 ug/Kg

RRF Calculation of standard 0.4 ppb for Naphthalene with N instrument for method 03/12/2021

RRF=	Area of compound /	Х	Conc. of Internal Standard /
	Area of Internal Standard	l	Conc. of Compound

= 16983/14563 X 0.4/0.4

= 1.166 (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 PLCS are referenced as IBLK(1) / IBLK(2) and PLCS01(1) / PLCS01(2) respectively.

Pesticide sample was extracted by method SFAM01.1 on 03/03/2021 and analyzed on 03/05/2021. 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. 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 Initial Calibration met the requirements. The Individual Mix A met the requirements. The Individual Mix B met the requirements. The PEM met the requirement.

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

#### **Calculation for the Concentration in Water Samples**

Concentration 
$$ug/L = (Ax) (Vt) (DF) (GPC)$$
  
(CF) (Vo) (Vi)

Where,

Ax = Response (peak area or height) of the compound to be measured.

CF = Mean Calibration Factor from the initial calibration (area/ng).

Vo = Volume of water extracted in mL.

Vi = Volume of extract injected in uL.

Vt = Volume of the concentrated extract in uL

GPC = Vin = GPC factor (If no GPC is performed, GPC=1) Vout

Vin = Volume of extract loaded onto GPC column.

Vout = Volume of extract collected after GPC cleanup.

### Calculation for the Concentration in Soil Samples

Concentration ug/Kg (Dry weight basis) = (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  $\frac{1}{2}$  the volume in the syringe as the volume injected onto each column).

Ws = Weight of sample extracted (g). D = % dry weight or  $\frac{100 - \% \text{Moisture}}{100}$ GPC =  $\frac{\text{Vin}}{\text{Vout}}$  = GPC factor (If no GPC is performed, GPC=1) Vout DF = Dilution Factor.

#### **Example of beta-BHC calculation**

Calibration Factor Calculation beta-BHC in the first column

Calibration factor (CF) = <u>peak area</u> Mass injected in ng

= 798021

Mean Calibration Factor = average of 5 point calibration factor

= 660853

Sample **X3172** <u>Ax</u> = 37240662 CF = 660853 Ws = 30.2 Vi = 1.0 Vt = 5000 DF = 1.0 GPC = 2.0 D = 1.0

Concentration ug/Kg (Dry weight basis) = (Ax) (Vt) (DF) (GPC)(CF) (Vi) (Ws) (D)

$$= \frac{(37240662) (5000) (1.0) (2.0)}{(660853)(1.0)(30.2)(1.0)}$$

#### = 18.65

#### Reported Results = 19 ug/kg

#### Aroclors:

The analyses were performed on instrument GCECD\_R. The front column is ZB-MR1 which is 30 meters, 0.32 mm ID, 0.5 um df, Catalogue # 7HM-G016-17. The rear column is ZB-MR2 which is 30 meters, 0.32 mm ID, 0.25  $\mu$ m; Catalogue # 7HM-G017-11.

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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) and ALCSO1(1) / ALCSO1(2) respectively.

Aroclor sample was extracted by Method SFAM01.1 on 03/03/2021 and analyzed on 03/04/2021. All the samples were subjected to a Sulfuric acid cleanup. The sample was extracted and analyzed within contractual holding time.

The Surrogate recoveries met the acceptable criteria.

The Retention Times met requirements.

The Laboratory Control Sample met requirements.

The Blank analysis did not indicate the presence of lab contamination.

The Initial Calibration met the requirements.

The Continuing Calibrations met the requirements.

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

## **Calculation for Concentration in Water Samples:**

Concentration ug/L = (Ax) (Vt) (DF) (GPC)(CF) (Vo) (Vi)

Where,

Ax = Response (peak area or height) of the compound to be measured. CF = Mean Calibration Factor from the initial calibration (area/ng). Vo = Volume of water extracted in mL. Vi = Volume of extract injected in uL. Vt = Volume of the concentrated extract in uL GPC =  $\frac{Vin}{Vout}$  = GPC factor (If no GPC is performed, GPC=1) Vout Vin = Volume of extract loaded onto GPC column. Vout = Volume of extract collected after GPC cleanup. DF = Dilution Factor.

## **Calculation for Concentration in Soil samples:**

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

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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 = % dry weight or <u>100 - % Moisture</u> 100

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

DF = Dilution Factor

#### Example of AR1260 calculation for Peak 1

Calibration factor Peak 1 100ppb ISTD= <u>peak area</u> Column2 Mass injected ng

$$=\frac{15310291}{0.100}$$

= 153102910 calibration factor for Peak 1 100ppb

Average of 5 peaks = 140248326

#### Sample X3173

Ax = 81391114 CF = 140248326 Vt = 10000 Vi = 1.0 Ws = 30.1 D = 1.0 GPC = 1.0DF = 5.0

Concentration ug/Kg (Dry weight basis) = (Ax) (Vt) (DF) (GPC)(CF) (Vi) (Ws) (D)

 $= \frac{(81391114) (10000) (5.0) (1.0)}{(140248326) (1.0) (30.1) (1.0)}$ 

Peak 1 = 964.01

Average of 5 peaks = 971.80

Reported results = 970 ug/kg

I certify that the data package is in compliance with the terms and conditions of the contract,

![](_page_13_Picture_0.jpeg)

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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.