

#### **SDG NARRATIVE**

LAB NAME: Alliance Technical Group, LLC CASE: 51961 SDG: XA170 CONTRACT: 68HERH20D0011 LAB CODE: ACE LAB ORDER ID: Q1148 MODIFICATION REF. NUMBER: NA

Sample ID	EPA Sample ID	Test	pН
Q1148-01	XA170		
Q1148-01DL	XA170DL	Aroclor	
Q1148-01DL2	XA170DL2	Aroclor	
Q1148-02	XA171		
Q1148-02DL	XA171DL	PEST	
Q1148-02DL2	XA171DL2	PEST	
Q1148-03	XA172		
Q1148-03DL	XA172DL	SVOA_SIM	
Q1148-04	XA173		
Q1148-04DL	XA173DL	SVOA	
Q1148-05	XA174		
Q1148-06	XA175		
Q1148-07	XA176		
Q1148-07DL	XA176DL	PEST	
Q1148-07DL2	XA176DL2	PEST	
Q1148-08	XA177		
Q1148-08DL	XA177DL	SVOA_SIM	
Q1148-08DL2	XA177DL2	SVOA_SIM	
Q1148-09	XA178		
Q1148-09DL	XA178DL	SVOA	
Q1148-10	XA179		

05 Soil samples were delivered to the laboratory intact on 01/22/2025. 05 Water samples were delivered to the laboratory intact on 01/22/2025.

Test requested on the Chain of Custody was Volatile Organic, Semi volatile Organic, Semi volatile Organic-SIM, Pesticide, and Aroclor by Method SFAM01.1.



The temperature of the samples was measured using an I R Gun. The samples temperature was 6.7 degree Celsius for the samples received on 01/22/2025.

# Low Volatiles:

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

The analysis of VOC-SFAM was based on method SFAM01.1\_LOW.

The Surrogate recoveries met the acceptable criteria. The Internal Standards Areas met the acceptable requirements. Instrument Performance Check met requirements. The Retention Times were met for all samples. The Tuning criteria met requirements. The Initial Calibration criteria met requirements. The Continuing Calibration criteria met requirements. The Blank analysis did not indicated 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 Water Level 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. 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

## Low/Med Level Soil/Sediment Calculation

Concentration in ug/Kg dry Weight basis) =  $(A_x)(I_s)(D_f)$ (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= 100 - %moisture 100

#### **Medium-Level Soil/Sediment Concentration**

Concentration(
$$\mu$$
g/Kg=  $\frac{(Ax)(Iis)(AVt)(1000)(DF)}{(Ais)RRF}(Va)(Ws)(S)$ 

Where

Ax = Area for the compound to be measured

- Ais = Area for the specific internal standard
- Is = Amount of internal standard added in nanograms (ng)
- S = % Solids/100
- RRF = Mean Relative Response Factor from the ambient temperature purge of the initial calibration standard
- Va = Volume of the aliquot of the sample methanol extract (i.e., sample extract not including the methanol added to equal 100  $\mu$ L), in  $\mu$ L added to reagent water for purging
- Ws = Weight of soil/sediment extracted, in g
- DF = Dilution Factor. The DF for analysis of soil/sediment sample extracts for volatiles by the medium-level method is defined as the ratio of the volume ( $\mu$ L) taken from the extract used to make the dilution plus the clean solvent added for the dilution ( $\mu$ L), to the volume taken from the extract used to make the dilution. For example, if 10  $\mu$ L of the extract was taken and added to 90  $\mu$ L of clean solvent, then ration would be (10  $\mu$ L + 90  $\mu$ L/10  $\mu$ L)= a DF of 10.



#### Example sample **XA174** for **Methyl Acetate:**

	Ax	=	26930
	Ais	=	265580
	Is	=	250
	S	=	100/100 = 1.00
-	RRF	=	0.371
	$AV_t$	=	10
	Va	=	100
	Ws	=	10
	DF	=	1
	Avt	=	10 + [10.0 (10.0  X  1.00/100)] = 10
Concentration(µg/Kg) =		= .	(26930)(250)(10)(1000)(1)
			(265580)(0.371)(100)(10.00)(1.0)

Reported results = 683.293 ug/Kg

Final Reported results = 680 ug/Kg

Relative Response Factor = **Dichlorodifluoromethane**: RUN **VX012825** for **5.0** ppb

- RRF=Area of compound<br/>Area of Internal StandardXConc. of Internal Standard<br/>Conc. of Compound
- $RRF = \frac{10048 X}{329937} \frac{50}{5.0}$

RRF= 0.305

#### Semivolatiles:

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.



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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 for water sample was extracted by Method SFAM01.1 on 01/23/2025 for soil sample was extracted by Method SFAM01.1 on 01/23/2025, The analysis of SVO-SFAM 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 {PB166197BS} recoveries met the requirements for all compounds.

The Blank Spike for {PB166251BS} recoveries met the requirements for all compounds.

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

The Tuning criteria met the requirements.

The Initial Calibration met the requirements.

The Continuous Calibration met the requirements.

Samples XA173 and XA178 were diluted due to high concentrations.

# **Concentration of Water Sample:**

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

 $(Ais) (R\overline{RF}) (Vo) (Vi)$ 

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.

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

Vout = Volume of extract collected after GPC cleanup.

D=100 - %moisture

\_\_\_\_\_

100

#### **Example calculation of XA173 for Phenol:**

Ax = 1907476 Ais = 588601 Is = 20 Vi = 1 Vt = 500 Wt = 30.2 Df = 1 RRF = 1.771 GPC = 2 D = 1

Concentration

(dry weight basis) ug/Kg = (1907476) (20) (500) (1) (2)

(588601) (1.771) (1) (30.2) (1)

= 1200 ug/Kg

RRF Calculation of standard 20 ppb for Naphthalene with P instrument for method 01/22/2025.

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



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= 2572842/2267664 X 20/20

= 1.135 (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 sample for Water sample was extracted by Method SFAM01.1 on 01/23/2025 and for Soil sample was extracted by Method SFAM01.1 on 01/29/2025. The analysis of SVOC-SIM-SFAM 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 {PB166252BS} recoveries met the requirements for all compounds. The Blank Spike for {PB166352BS} 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 requirements. The Continuous Calibration met requirements.

Samples XA172 and XA177 were diluted due to high concentrations.

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)

 $(Ais) (R\overline{RF}) (Vo) (Vi)$ 

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

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

Vout = Volume of extract collected after GPC cleanup.

 $D = \frac{100 - \% \text{moisture}}{100}$ 

#### **Example calculation of XA172 for Pyrene:**

Ax = 86294 Ais = 8335 Is = 0.4 Vi = 1 Vt = 500 Wt = 30.2 Df = 1 RRF = 1.587 GPC = 2 D = 1

Concentration

(dry weight basis) ug/Kg =

 $\frac{(86294)(0.4)(500)(1)(2)}{(8335)(1.587)(1)(30.2)(1)}$ 



= 86 ug/Kg

RRF Calculation of standard 0.4 ppb for **Naphthalene** with N instrument for method 01/21/2025.

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

= 5142/4615 X 0.4/0.4

= 1.114 (Reported RRF)

## **Pesticides:**

The analyses for Pesticides were performed on instrument ECD\_D. The front column is ZB-Multi-Residue-1 which is 30 meters, 0.32 mm ID, 0.50 um df. The rear column ZB-Multi-Residue-2 which is 30 meters, 0.32 mm ID, 0.25 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 01/24/2025 and analyzed on 01/27 and 01/28/2025. 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 except for

XA171DL2 [Tetrachloro-m-xylene(2)-163%],

XA176DL2 [Tetrachloro-m-xylene(2)-166%],

The SOW allows one surrogate to fail to meet the criteria per column. ((Please See Section 11.3.6 of Exhibit D Pesticide Analysis).

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.

Sample XA171, XA171DL, XA176 and XA176DL were diluted due to high concentration.

Samples XA171, XA171DL, XA171DL2, XA176, XA176DL and XA176DL2 failed to meet the %D for the results between the two columns Criteria.

Samples DCXT9 have the concentration of target compound – Heptachlor epoxide, DCXU6 have the concentration of target compound - delta-BHC, 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.

# **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

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

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  $\frac{100 - \%Moisture}{100}$ GPC =  $\frac{Vin}{Vout}$  = GPC factor (If no GPC is performed, GPC=1) Vout

DF = Dilution Factor.

## **Example of 4,4'-DDE calculation**

Calibration Factor Calculation 4,4'-DDE in the Second column

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

= 17763000

Mean Calibration Factor = average of 5 point calibration factor

= 16378700

Sample XA171 <u>Ax</u> = 13587031742 CF = 16378700 Ws = 30.0Vi = 1.0Vt = 5000DF = 1.0GPC = 2.0D = 1.0

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

 $= \frac{(13587031742) (5000) (1.0) (2.0)}{(16378700) (1.0) (30.0) (1.0)}$ 

= 276.51

Reported Results = 280 ug/kg



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## Aroclors:

The analyses were performed on instrument GC ECD\_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.

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 ALCS01(1)/ALCS01(2) respectively.

Aroclor sample was extracted by Method SFAM01.1 on 01/24/2025 analyzed on 01/24 and 01/27/2025. 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 except for XA170 [Tetrachloro-m-xylene(1) - 262%], XA170DL [Tetrachloro-m-xylene(1) - 301%], XA170DL2 [Tetrachloro-m-xylene(1) - 0%, Tetrachloro-m-xylene(2) - 0% Decachlorobiphenyl(1) - 0%, Decachlorobiphenyl(2) - 0%], The SOW allows one surrogate to fail to meet the criteria per column. ((P2ease See Section 11.3.6 of Exhibit D Aroclor Analysis).

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. The Retention Times were acceptable for all samples.

Sample XA170 and XA170DL were diluted due to high concentration

Sample XA170 failed to meet the %D for the results between the two columns Criteria.

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 = <u>Vin</u> = 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) = (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).

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

#### Example of AR1242 calculation for Peak 1

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

$$= \frac{17485675}{0.100}$$

= 174856750 calibration factor for Peak 1 100ppb

Average of 5 peaks = 151560974

Sample **XA170** Ax = 3426771028CF = 151560974Vt = 10000Vi = 1.0Ws = 30.1D = 1.0GPC = 1.0



DF = 1.0

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# Concentration ug/Kg (Dry weight basis) = $(\underline{Ax}) (\underline{Vt}) (\underline{DF}) (\underline{GPC})$ (CF) (Vi) (Ws) (D) = (2426771028) (10000) (1.0)

 $= \frac{(3426771028)(10000)(1.0)(1.0)}{(151560974)(1.0)(30.1)(1.0)}$ 

Peak 1 = 7511.58

Average of 5 peaks = 7537.99

Reported results = 7500 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.