SDG NARRATIVE

LAB NAME: Alliance Technical Group, LLC
CASE: 51736
SDG: A4E93
CONTRACT: 68HERH20D0011
LAB CODE: ACE
LAB ORDER ID: P4429
MODIFICATION REF. NUMBER: NA

Sample ID	EPA Sample ID	Test	pH
P4429-01	A4E93		
P4429-01DL	A4E93DL	VOA	
P4429-02	A4E94		
P4429-02DL	A4E94DL	SVOA	
P4429-03	A4F89		
P4429-04	A4F90		
P4429-05	A4F93		
P4429-06	A4F94		
P4429-07	A4FA5		
P4429-07ME	A4FA5ME	VOA	
P4429-08	A4FA6		
P4429-09	A4FB0		
P4429-10	A4FB3		
P4429-10DL	A4FB3DL	SVOA	
P4429-11	A4FE6		5.0
P4429-14	A4EB8		1.0
P4429-15	A4F54		
P4429-16	A4F56		
P4429-17MS	A4F56MS		
P4429-18MSD	A4F56MSD		
P4429-19	A4F62		
P4429-20	A4F66		
P4429-21	A4F67		
P4429-22	A4F74		
P4429-23	A4FE7		5.0

10 Soil samples were delivered to the laboratory intact on 10/17/2024.
01 Water sample was delivered to the laboratory intact on 10/17/2024.

02 Water sample was delivered to the laboratory intact on 10/18/2024.
08 Soil samples were delivered to the laboratory intact on 10/18/2024.

Test requested on the Chain of Custody was Volatile Organic and Semivolatile Organic by Method SFAM01.1.

The temperature of the samples was measured using an I R Gun. The samples temperature was 2.6 degree Celsius for the samples received on 10/17/2024, 2.1 degree Celsius for the samples received on 10/18/2024.

Discrepancies with tags, jars, and/or COC

Issue 01: "Lab has received trip blank samples without any preservation therefore, Lab would like to confirm that these trip blanks have pH more than 2 due to samples were not preserved."

Resolution 01: "Confirmed. Please have the lab proceed with analysis of these trip blanks."

Low Volatiles:

The analysis performed on instrument MSVOA_U were done using GC column RXI-624SIL MS 30m 0.18mm 1.4 um. Cat#13868.

The analysis performed on instrument MSVOA_V were done using GC column RXI-624SIL MS 30m 0.18mm 1.4 um. Cat#13868.

The analysis performed on instrument MSVOA_W were done using GC column RXI-624SIL MS 30m 0.18mm 1.4 um. Cat#13868.

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

The Holding Times were met for all analysis.

The Surrogate recoveries met the acceptable criteria except for
A4F89 [1,1-Dichloroethene-d2 - 40%],
A4F90 [1,1-Dichloroethene-d2 - 40%],
A4F93 [1,1-Dichloroethene-d2 - 43%],
A4F94 [1,1-Dichloroethene-d2 - 43%],
A4FA5 [1,1-Dichloroethene-d2 - 45%, 1,2-Dichlorobenzene-d4 - 74%],
A4FA6 [1,1-Dichloroethene-d2 - 39%],
A4FB0 [1,1-Dichloroethene-d2 - 39%],
A4FB3 [1,1-Dichloroethene-d2 - 45%],
A4FE6 [Toluene-d8 - 75%],
A4EB8 [Toluene-d8 - 73%],
A4F54 [1,1-Dichloroethene-d2 - 43%, 1,2-Dichlorobenzene-d4 - 74%, 1,2-Dichloroethane-d4 - 69%],

A4F56 [1,1-Dichloroethene-d2 - 44%, 1,2-Dichlorobenzene-d4 - 75%],
A4F62 [1,1-Dichloroethene-d2 - 41%, 1,2-Dichlorobenzene-d4 - 74%],
A4F67 [1,1-Dichloroethene-d2 - 39%, 1,2-Dichlorobenzene-d4 - 69%, 1,2-Dichloroethane-d4 - 67%],
A4F74 [1,1-Dichloroethene-d2 - 43%] and
A4FE7 [Toluene-d8 - 70%]. As per method, up to three surrogates are allowed to fail. No corrective action was taken.

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 MS {A4F56MS} recovery met the requirements for all compounds.
The MSD {A4F56MSD} recovery met the requirements for all compounds.
The RPD {A4F56MSD} RPD met the requirements for all compounds.

The Initial Calibration met the requirements.

The Continuing Calibration (VSTD050312) file ID VV037890.D met the requirements except for Chloroform (21.0%). 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 (VSTD025525) file ID VW030627.D met the requirements except for 1,1-Dichloroethene-d2 (-26.9%). 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 (VSTD025529) file ID VW030676.D met the requirements except for 1,1-Dichloroethene-d2 (-27.3%). 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 did not indicate the presence of lab contamination.
The storage blank did not indicate the presence of lab contamination.

Samples A4E93, A4FA5 were diluted due to high concentrations.

The sample A4FA6 was analyzed following the analysis of A4FA5. Samples A4FA5 had hit of compound Toluene with concentration above calibration levels. Sample A4FA6 have not detected of the compound Toluene. Therefore, as per method no instrument blank was required

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

Calculation:

Low/Med Water Level Calculation

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

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.
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

$$\text{Concentration in ug/Kg dry Weight basis)} = \frac{(Ax)(Is)(Df)}{(Ais)(RRF)(Ws)(D)}$$

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

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

Medium-Level Soil/Sediment Concentration

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

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
$\overline{RRF}$	=	Mean Relative Response Factor from the ambient temperature purge of the initial calibration standard

AV_t = Adjusted total volume of the methanol extract plus soil water in mL determined by: $AV_t = V_t + \{W_s - [W_s(S)]$.
Where Vt = total volume of methanol extract in mL. This volume is typically 5.0 mL, even though only 0.1 mL is transferred to the vial in Section 10.2.3.6. The quantity derived from {Ws - [Ws(S)]} is the soil water volume and is expressed in mL.

Va = Volume of the aliquot of the sample methanol extract (i.e., sample extract not including the methanol added to equal 100 µL), in µL 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 (µL) taken from the extract used to make the dilution plus the clean solvent added for the dilution (µL), to the volume taken from the extract used to make the dilution. For example, if 10 µL of the extract was taken and added to 90 µL of clean solvent, then ration would be (10 µL + 90 µL/10 µL)= a DF of 10.

Example sample **A4FA5ME** for **Toluene:**

Ax	=	185931
Ais	=	573189
Is	=	250
S	=	55.7/100 = 0.557
$\overline{RRF}$	=	1.563
AV_t	=	6.90
Va	=	100
Ws	=	4.29
DF	=	1
Avt	=	5 + [4.29 - (4.29 X 55.7/100)] = 6.90

$$\text{Concentration}(\mu g/Kg) = \frac{(185931)(250)(6.90)(1000)(1)}{(573189)(1.563)(100)(4.29)(0.557)}$$

Reported results = 1498.20 ug/Kg

Final Reported results = 1500 ug/Kg

Relative Response Factor = **Dichlorodifluoromethane**: RUN **VV092624** for **5.0** ppb

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

$$RRF = \frac{29470}{654543} \times \frac{50}{5.0}$$

RRF= 0.450

Semivolatiles:

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.

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 10/18/2024 for soil sample was extracted by Method SFAM01.1 on 10/18/2024, 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 except for,
A4EB8 [2-Nitrophenol-d4 - 132%]. As per method four surrogates are allowed to fail. Therefore no further corrective action was taken.

The Internal Standards Areas met the acceptable requirements.
The Retention Times were acceptable for all samples.
The MS {A4F56MS} recovery met the requirements for all compounds.
The MSD {A4F56MSD} recovery met the requirements for all compounds.
The RPD {A4F56MSD} RPD met the requirements for all compounds
The Blank Spike for {PB164251BS} recoveries met the requirements for all compounds.
The Blank Spike for {PB164283BS} 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 A4E94, A4FB3 were diluted due to high concentrations.

The Sample A4EB8, A4F66, A4F74, A4F89, A4F90, A4F93, A4F94, A4FA5 and A4FB0 have the concentration of target compound below method detection limits; therefore it is not reported as Hit in Form1.

Concentration of Water Sample:

$$\text{Concentration ug/L} = \frac{(Ax)\,(Is)\,(Vt)\,(DF)\,(GPC)}{(Ais)\,(\overline{RRF})\,(Vo)\,(Vi)}$$

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 = 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,

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

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.

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

Example calculation of A4E94 for Phenol:

Ax = 189698
Ais = 85930

Is = 20
Vi = 1
Vt = 500
Wt = 30.0
Df = 1
RRF = 1.752
GPC = 2
D= 1

Concentration

$$\text{(dry weight basis) ug/Kg} = \frac{(189698)\,(20)\,(500)\,(1)\,(2)}{(85930)\,(1.752)\,(1)\,(30.0)\,(1)}$$

= 840 ug/Kg

RRF Calculation of standard 20 ppb for Naphthalene with P instrument for method 10/07/2024.

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

= 326983/315808 X 20/20

= 1.035 (Reported RRF)

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.