SDG NARRATIVE

LAB NAME: Alliance Technical Group, LLC
CASE: 51860
SDG: YE632
CONTRACT: 68HERH20D0011
LAB CODE: ACE
LAB ORDER ID: P5378
MODIFICATION REF. NUMBER: NA

Sample ID	EPA Sample ID	Test	pH
P5378-01	YE632		
P5378-02	YE633		
P5378-03	YE634		
P5378-04MS	YE634MS		
P5378-05MSD	YE634MSD		
P5378-07	YE685		
P5378-07ME	YE685ME	VOA	
P5378-08	YE686		

05 Soil samples were delivered to the laboratory intact on 12/20/2024.
02 Soil samples were delivered to the laboratory intact on 12/21/2024.

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

The temperature of the samples was measured using an I R Gun. The samples temperature was 2.0 degree Celsius for the samples received on 12/20/2024, 2.1 degree Celsius for the samples received on 12/21/2024.

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 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 Holding Times were met for all analysis.

The Surrogate recoveries met the acceptable criteria except for ,
YE634 [1,1,2,2-Tetrachloroethane-d2 - 130%, 2-Butanone-d5 - 155%, 2-Hexanone-d5 - 142%],
YE685 [1,2-Dichlorobenzene-d4 - 73%],
YE686 [1,2-Dichlorobenzene-d4 - 75%, 1 and2-Dichloropropane-d6 - 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 {YE634MS} recovery met the requirements for all compounds.
The MSD {YE634MSD} recovery met the requirements for all compounds.
The RPD {YE634MSD} RPD met the requirements for all compounds.

The initial Calibration met the requirements for all compounds.

The Continuing Calibration (VSTD025483) file ID VW031541.D met the requirements except for trans-1,3-Dichloropropene-d4 (-29.3%). 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 analysis did not indicated the presence of lab Contamination.
The Storage blank analysis did not indicated the presence of lab Contamination.

Sample YE685 was diluted due to high concentration.

The sample YE632 was analyzed following the analysis of YE685. Sample YE685 had hit of compound 1,2,4-Trimethylbenzene with concentration above calibration levels. Sample YE632 had concentration of this compound which is below CRQL. 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 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= $\frac{100 - \%moisture}{100}$

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 **YE685ME** for **1,2,4-Trimethylbenzene:**

Ax	=	10611
Ais	=	65793
Is	=	250
S	=	74.6/100 = 0.746
$\overline{RRF}$	=	3.142
AV_t	=	6.17
Va	=	100
Ws	=	6.17
DF	=	1
Avt	=	5 + [6.17 (6.17 X 81.1/100)] = 6.17

$$\text{Concentration}(\mu g/Kg) = \frac{(10611)(250)(6.17)(1000)(1)}{(65793)(3.142)(100)(6.17)(0.811)}$$

Reported results = 158.230 ug/Kg

Final Reported results = 160 ug/Kg

Relative Response Factor = **Dichlorodifluoromethane**: RUN **VX120524** for **5.0** ppb

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

$$RRF = \frac{8793}{234557} \times \frac{50}{5.0}$$

RRF= 0.375

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.

Semis volatile Organic for soil sample was extracted by Method SFAM01.1 on 12/26/2024, The analysis of SVOCMS Group4 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 MS {YE634MS} recovery met the requirements for all compounds.
The MSD {YE634MSD} recovery met the requirements for all compounds.
The RPD {YE634MSD} RPD met the requirements for all compounds.
The Blank Spike for {PB165847BS} 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.

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 YE632 for 1,4-Dioxane:

Ax = 4426
Ais = 124479
Is = 20
Vi = 1
Vt = 500
Wt = 30.1

Df = 1
RRF = 0.604
GPC = 2
D= 0.792

Concentration

$$\text{(dry weight basis) ug/Kg} = \frac{(4426)\,(20)\,(500)\,(1)\,(2)}{(124479)\,(0.604)\,(1)\,(30.1)\,(0.792)}$$

= 49 ug/Kg

RRF Calculation of standard 20 ppb for 1,4-Dioxane with G instrument for method 12/11/2024.

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

= 36937/134078 X 20/8

= 0.689 (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 sample was extracted by Method SFAM01.1 on 12/26/2024. The analysis of SVOCMS Grop3 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 MS {YE634MS} recovery met the requirements for all compounds.
The MSD {YE634MSD} recovery met the requirements for all compounds.
The RPD {YE634MSD} RPD met the requirements for all compounds
The Blank Spike for {PB165848BS} 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.

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.

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

Example calculation of YE632 for 1,4-Dioxane:

Ax = 6716
Ais = 4899
Is = 0.4
Vi = 1
Vt = 500
Wt = 30.1
Df = 1
RRF = 0.539
GPC = 2
D= 0.792

Concentration

$$\text{(dry weight basis) ug/Kg} = \frac{(6716)\,(0.4)\,(500)\,(1)\,(2)}{(4899)\,(0.539)\,(1)\,(30.1)\,(0.792)}$$

$$= 43 \text{ ug/Kg}$$

RRF Calculation of standard 0.4 ppb for **1,4-Dioxane** with M instrument for method 12/18/2024.

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

= 3185/4849 X 0.4/0.4

= 0.657 (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.