

Date: July 13, 2016

To: Rob Ede
Hahn and Associates Inc.

From: Jeanne Peterson
Sr. Data Validator, AQA

Subject: Data Validation
Siltronic RI - Doane Creek
Fremont Analytical Work Order # 1604081 (A6D0056)

SUMMARY

Level III data validation was performed on the data for four soil samples prepared and analyzed with approved procedures using the Method for the Determination of Volatile Petroleum Hydrocarbons (VPH) Fractions or the Method for the Determination of Extractable Petroleum Hydrocarbons (EPH) Fractions. The samples were submitted to Fremont Analytical (Fremont) for analysis. Data were reported for all requested analytes.

The analytical data were evaluated in accordance with the *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review* (October 1999) and the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (February 1994) (NFG).

In general, most of the data are valid as reported. No sample data were rejected. Other qualifiers were applied to the data as specified in the Data Qualifiers section below.

See attached data validation spreadsheets for supporting documentation on the data review and validation.



SAMPLES

The samples included in this validation are listed below.

Sample ID	Fremont Laboratory ID	APEX Laboratory ID	Analysis
5237-160401-DC-EMB046G	1604081-001	A6D0056-05	VPH
5237-160401-DC-EMB046	1604081-002	A6D0056-06	EPH
5237-160401-NPD-EMB002G	1604081-003	A6D0056-07	VPH
5237-160401-NPD-EMB002	1604081-004	A6D0056-08	EPH

DATA QUALIFIERS (see following sections for detailed explanations)

Sample ID	Method	Analyte	Qualifier	Reason for Qualification
5237-160401-DC-EMB046G	VPH	Aromatic hydrocarbon (C12-C13)	UJ	Poor replicate precision
5237-160401-DC-EMB046	EPH	Aliphatic hydrocarbon (C16-C21)	J	Low surrogate recovery
		Aliphatic hydrocarbon (C8-C10)	UJ	Low surrogate recovery
		Aliphatic hydrocarbon (C10-C12)		
		Aliphatic hydrocarbon (C12-C16)		
Aliphatic hydrocarbon (C21-C34)				
5237-160401-NPD-EMB002	EPH	Aliphatic hydrocarbon (C16-C21)	J	Low surrogate recovery and poor replicate precision
		Aliphatic hydrocarbon (C8-C10)	UJ	Low surrogate recovery
		Aliphatic hydrocarbon (C10-C12)		
		Aliphatic hydrocarbon (C12-C16)		
Aliphatic hydrocarbon (C21-C34)				

DISCUSSION

Sample Shipping/Receiving

All COC, analysis request, and sample receipt documentation was complete and correct.



Holding Times and Preservation

The samples were properly preserved and analyzed within the prescribed holding times.

Calibration

All initial and continuing calibration acceptance criteria were met with the following exceptions.

Method VPH

The initial continuing calibration verification (ICV) and/or continuing calibration verification (CCV) percent differences (%Ds) were >20% with positive bias for aliphatic hydrocarbon (C5-C6), aliphatic hydrocarbon (C10-C12), aromatic hydrocarbon (C8-C10), aromatic hydrocarbon (C10-C12), and aromatic hydrocarbon (C12-C13). The associated sample results were non-detects and not affected by the high bias and, therefore, were not qualified based on professional judgment.

Blanks

No target analytes were detected in the method blanks.

Surrogates

All surrogate recoveries were within laboratory QC acceptance criteria with the following exceptions.

Method EPH

The 1-chlorooctadecane recoveries were < the lower acceptance limit but $\geq 10\%$ for samples 5237-160401-DC-EMB046 and 5237-160401-NPD-EMB002. The associated sample results that were detects were **qualified J**, and the associated sample results that were non-detects were **qualified UJ**.

Laboratory Control Sample (LCS)

The LCS analysis met all laboratory acceptance criteria with the following exception.

Method VPH

The LCS recovery was > the upper acceptance limit for aromatic hydrocarbon (C10-C12). The associated sample results were non-detects and not affected by the high bias and, therefore, were not qualified based on professional judgment.



Matrix Spike (MS)/Matrix Spike Duplicate (MSD)

The MS/MSD analysis met all QC acceptance criteria with the following exceptions.

Method VPH

The MS/MSD recoveries were > the upper acceptance limit for aromatic hydrocarbon (C10-C12). The associated sample results were non-detects and not affected by the high bias and, therefore, were not qualified based on professional judgment.

The MSD recovery was > the upper acceptance limit for aromatic hydrocarbon (C12-C13). The associated sample results were non-detects and not affected by the high bias and, therefore, were not qualified based on professional judgment.

Laboratory Duplicate

The laboratory duplicate analysis met all QC acceptance criteria with the following exception.

Method VPH

The relative percent difference (RPD) between the MS and MSD results was > the acceptance limit for aromatic hydrocarbon (C12-C13). The aromatic hydrocarbon (C12-C13) result for parent sample 5237-160401-DC-EMB046G was a non-detect and, therefore, was **qualified UJ**. Because another duplicate sample was performed on a sample from another work order that was within acceptance criteria, no other sample data were qualified based on professional judgment.

Method EPH

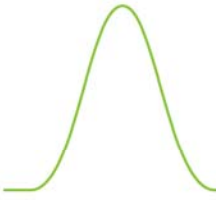
The RPD between the sample and duplicate results was > the acceptance limit for aliphatic hydrocarbon (C16-C21). The aliphatic hydrocarbon (C16-C21) result for parent sample 5237-160401-NPD-EMB002 was a detect and, therefore, was **qualified J**. Because all other QC criteria were met for this analyte, no other sample data were qualified based on professional judgment.

Field Duplicate

A field duplicate was not collected with the samples in this work order.

Reporting Limits

All reporting limits were properly reported. The samples were not diluted.



Other QC

No other specific issues that affect data quality were identified.

Hahn Data Validation Summary Worksheet

SDG#: 1604080_A6D0013	Laboratory: Fremont	Validator: Jeanne Peterson	Validation Date: 06/13/2016
Site: Siltronic - Doane Creek	COC#: NA		Validation Level: <input type="checkbox"/> II <input checked="" type="checkbox"/> III
Matrix: Soil	# of Samples: 4	Tracking docs present: See sample receipt and log-in documentation	
COCs present: Yes	COCs signed: Yes	COCs dated: Yes	Sample Container Integrity: OK
Analyses: <input type="checkbox"/> VOCs <input type="checkbox"/> SVOCs <input type="checkbox"/> PAHs <input type="checkbox"/> GRO <input type="checkbox"/> DRO <input type="checkbox"/> Pests <input type="checkbox"/> PCBs <input type="checkbox"/> Metals <input type="checkbox"/> Gen Chem <input type="checkbox"/> Cyanide <input checked="" type="checkbox"/> Other: VPH, EPH			

Requested Analyses Not Reported			
Client Sample ID	Lab Sample ID	Analysis	Comments
None			

Hold Time/Preservation Outliers								
Client Sample ID	Lab Sample ID	Analysis	Pres.	Collection Date	Preparation Date	Analysis Date	Analysis <3X HT	Analysis ≥3X HT
None								

Comments: Samples collected 3/31.
Cooler temps OK.

Hahn Level III VPH Worksheet

SDG: 1604080	Matrix: Soil	Lab Sample IDs: 1604080-001, -003
Method/Batch #: VPH/13429		

Lab-established control limits may be used in place of these:

Analyte (outliers)	Calibration			Method Blank	5X Blank	LCS %R 70-130%	LCSD %R 70-130%	LCSD/ LCSD RPD ≤25%	MS %R 70-130%	MSD % 70-130%	MS/D RPD ≤25%
	RSD/r ≤20%/ ≥0.99	ICV %D ±20%	CCV %D ±20%								
Aliphatic hydrocarbon (C5-C6)	✓	149	✓	✓	NA	✓	NA	NA	✓	✓	✓
Aliphatic hydrocarbon (C10-C12)	✓	122	✓	✓	NA	✓	NA	NA	✓	✓	✓
Aromatic hydrocarbon (C8-C10)	✓	123	✓	✓	NA	✓	NA	NA	✓	✓	✓
Aromatic hydrocarbon (C10-C12)	✓	127	171/127	✓	NA	149	NA	NA	204	226	✓
Aromatic hydrocarbon (C12-C13)	✓	✓	150	✓	NA	✓	NA	NA	✓	153	30

Surrogate Outliers (60-140% or laboratory-established control limits)

Sample ID	Surrogate	%R	Sample ID	Surrogate	%R	Sample ID	Surrogate	%R
None								

Comments: HTs out. MB, LCS, 1604081-001AMS/MSD, 1604078-003ADUP

NOTE: ICV had detects, but run log shows cleanout runs in after the CCV and LCS prior to the method blank and samples. The method blank had no detects; therefore, the ICV detects were not applicable.

Hahn Level III EPH Worksheet

SDG: 1604080	Matrix: Soil	Lab Sample IDs: 1604080-002, -004
Method/Batch #: EPH/13403		

Lab-established control limits may be used in place of these: 70-130% 70-130% ≤25%

Analyte (outliers)	Calibration			Method Blank	5X Blank	LCS %R	MS %R	MSD %R	MS/D RPD	Lab Dup RPD		
	RSD/r ≤20%/ ≥0.99	ICV/CCV %D ±20%	Daily RT Windows									
Aliphatic Hydrocarbon (C16-C21)	✓	✓	NA	✓	NA	✓	NA	NA	NA	47.4		

Surrogate Outliers (60-140% or laboratory-established control limits)

Sample ID	Surrogate	%R	Sample ID	Surrogate	%R	Sample ID	Surrogate	%R
1604081-004ADUP	1-CIOD	53.6						
-002	1-CIOD	44.8						
	o-Terph	44.8						
-004	1-CIOD	63.7						

IS Outliers (-50% to +100% of CCV)

Sample ID	Area	RT	Area	RT	Area	RT	Area	RT	Area	RT	Area	RT
NA												

Comments: HT OK. MB, LCS, 1604081-004ADUP.

NOTE: ICV had detects, but run log shows ICV was run much earlier in the day than the samples, and the method blank extracted with and run right before the samples had no detects; therefore, the ICV detects were not applied to the sample results.