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Data Validation Report

Project:	PPG - Garfield Avenue Remedial Investigations (GARIS) - NonForrest Street	
Laboratory:	Accutest, Dayton, NJ	
Laboratory Job No.:	JB23759	
Analysis/Method:	Hexavalent Chromium SW846 3060A/7196	
Validation Level:	Full	
Site Location/Address:	PPG Site 114 - Garfield Avenue, Jersey City, NJ	
AECOM Project No:	60154801-6001	
Prepared by:	Justin Webster /AECOM	Completed on: 01/15/2013
Reviewed by:	Lisa Krowitz /AECOM	File Name: 2013-01-15 DV Report JB23759-F

Introduction

The data were reviewed in accordance with the FSP-QAPP and the following NJDEP validation Standard Operating Procedures (SOP):

- NJDEP Office of Data Quality SOP 5.A.10, Rev 3 (September 2009), SOP for Analytical Data Validation of Hexavalent Chromium - for USEPA SW-846 Method 3060A, USEPA SW-846 Method 7196A and USEPA SW-846 Method 7199;

The results of quality control data analyzed with site samples were used to assess the overall reliability of the data. The following qualifiers were used to identify data quality issues:

U: Indicates the analyte was not detected in the sample above the sample reporting limit.

J: Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

UJ: Indicates the analyte was not detected above the reporting limit and the reporting limit was approximate.

R: The sample result was rejected due to serious deficiencies; the presence or absence of the analyte could not be confirmed.

Sample Information

The samples listed below were collected by AECOM on December 13, 2012 as part of the PPG - Garfield Avenue Remedial Investigation (GARIS) - NonForrest Street sampling at the PPG Site - 114, Jersey City, New Jersey. Only the samples and parameters that are listed below were validated.

Field ID	Laboratory ID	Matrix	Fraction
EF-128-2.0-2.5	JB23759-1	Soil	Hexavalent Chromium
EF-129-0.5-1.0	JB23759-3	Soil	Hexavalent Chromium
EF-129-0.5-1.0X (Field duplicate of EF129-0.5-1.0)	JB23759-4	Soil	Hexavalent Chromium
EF-EB20121213 (Equipment Blank)	JB23759-2	Aqueous	Hexavalent Chromium

The samples were collected following the procedures detailed in the Remedial Investigation Work Plan - Soil for Non-Residential Chromate Chemical Production Waste Sites 114, 132, 133, 135, 137, 143, and 186, Jersey City, New Jersey and the Field Sampling Plan/Quality Assurance Project Plan for Non-Residential and Residential Chromium Sites Hudson County, New Jersey (December 2011).

General Comments

The data package was complete. Quality control (QC) issues identified during validation are discussed below. Refer to the Soil Target Analyte Summary Hit List in Attachment A for a listing of all detected results, qualified results, and associated qualifications, where applicable.

MS Results

Sample EF-129-0.5-1.0 was selected for the matrix spike (MS) analysis associated with the samples in this SDG and was used for supporting data quality recommendations. The soluble and insoluble MS recoveries were 77.3% and 81.7%, respectively, which met the quality control criteria of 75-125%. The post digestion spike (PDS) recovery was 92.9%, which met the PDS criteria of 85-115%. No data qualification was required on the basis of spike recoveries.

Data Quality and Usability

In general, these data appear to be valid and may be used for decision-making purposes. No data were rejected or qualified.

ATTACHMENTS

Attachment A: Target Analyte Summary Hitlist(s)

Attachment B: Data Validation Report Form

Attachment A

Target Analyte Summary Hitlist(s)

Soil Target Analyte Summary Hit List (Hexavalent Chromium)

Site Name PPG - Garfield Avenue Remedial Investigation (GARIS) - NonForrest Street
Sampling Date December 13, 2012
Lab Name/ID Accutest, Dayton, NJ
SDG No JB23759
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID EF-EB20121213

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
EF-128-2.0-2.5	JB23759-1	CHROMIUM (HEXAVALENT)	U	1.1	1.1	0.47		
EF-129-0.5-1.0	JB23759-3	CHROMIUM (HEXAVALENT)	U	1.7	1.7	0.43		
EF-129-0.5-1.0X	JB23759-4	CHROMIUM (HEXAVALENT)	U	1.1	1.1	0.43		

Note: A “U” under Method Blank column indicates a nondetect result.
A “U” under the Laboratory Sample Result and Validation Sample Result columns indicates a nondetect result at the RL.

NJDEP Laboratory Footnote

1. The value reported is less than or equal to 3x the value in the preparation/reagent blank. It is the policy of NJDEP-DPFSR to negate the reported value due to probable foreign contamination unrelated to the actual sample. The end-user, however, is alerted that a reportable quantity of the analyte was detected.

2. The value reported is greater than three (3) times but less than ten (10) times the value in the preparation/reagent blank and is considered "real". However, the reported value must be quantitatively qualified "J" due to the preparation/reagent blank contamination. The "B" qualifier alerts the end-user to the presence of this analyte in the preparation/reagent blank.

3. The value reported is less than or equal to three (3) times the value in the trip/field blank. It is the policy of NJDEP-DPFSR to negate the reported value as due to probable foreign contamination unrelated to the actual sample. The end-user, however, is alerted that a reportable quantity of the analyte was detected.

4. The value reported is greater than three (3) times but less than ten (10) times the value in the trip/field blanks and is considered "real". However, the reported value must be quantitatively qualified "J" due to trip/field blank contamination.

5. The concentration reported by the laboratory is incorrectly calculated.

6. The laboratory failed to report the presence of the analyte in the sample.

7. The reported Hexavalent Chromium value was qualified because the Calibration Check Standard was not within the recovery range (90-110 percent).

8. In the Duplicate Sample Analysis, Hexavalent Chromium fell outside the control limits of + 20 percent for sample results > 4xRL or + RL for sample results < 4xRL. Therefore, the result was qualified.

9. This analyte was rejected because the laboratory performed the Duplicate Analysis on a field blank.

10. The reported value was qualified because the PVS recovery was greater than 115 percent.

11. The reported value was qualified because the PVS recovery was less than 85 percent.

12. The non-detected value was qualified (UJ) because the PVS recovery was less than 85 percent. The possibility of a false negative exists.

13. The reported analyte was qualified because the associated Calibration Blank result was greater than the MDL.

14. The laboratory made a transcription error. No hits were found in the raw data.

15. This analyte is rejected because the laboratory exceeded the holding time for digestion and analysis.

16. The laboratory subtracted the preparation/reagent blank from the sample result. The Reviewer's calculation puts the preparation/reagent blank back into the result.

17. The photocopy is unreadable. Therefore, the QA reviewer cannot read the laboratory's reported concentration result.

18. The reported value was qualified because the predigestion spike recovery was less than 75 %, but greater than 50%.

19. The reported value was qualified because the predigestion spike recovery was greater than 125 percent.

20. The non-detected value was qualified (UJ) because the redigestion spike recovery was less than 75 percent. The possibility of a false negative exists.

21. The reported result was qualified or rejected because the laboratory did not record the pH value(s) of the sample in a laboratory notebook.

22. The reported value was qualified (J/UJ) because the sample moisture content exceeded 50 percent.

23. The sample result was rejected because the soluble and insoluble matrix spike recoveries were less than 50%.

24. The detected sample result was qualified (J) because the incorrect spike concentration was used.

25. The reported sample results were rejected because the predigestion spike recovery was greater than 150 percent.

26. The reported sample results were rejected because the redigestion spike recovery was greater than 150 percent.

27. The reported value was qualified (J) because the redigestion spike recovery was less than 75 percent.

28. The reported value was qualified (J/UJ) because the sample digestion temperature was less than 90C.

29. In the Field Duplicate Sample Analysis, Hexavalent Chromium fell outside the control limits of = 20% for sample results > 4xRL or + RL for sample results < 4xRL. Therefore, the result was qualified.

30. The reported value was qualified as estimated (J/UJ) but the bias is uncertain due to both high and low MS recoveries.

31. The reported result was greater than the MDL but less than the RL and qualified (J) as estimated by the laboratory.

32. The reported value was qualified because the sample replicate precision criterion of = 20% for method 7199 was exceeded.

33. The reported value was qualified (J/UJ) because the laboratory control sample (LCS) recovery was less than 80%.

34. The reported value was qualified (J) because the laboratory control sample (LCS) recovery was greater than 120%.

35. The reported result was qualified because the matrix spike analysis was not performed at the proper frequency.

36. The reported result was qualified because the laboratory duplicate analysis was not performed at the proper frequency.

37. The result was qualified because the cooler temperature upon sample receipt exceeded 6C.

38. The reported value was qualified because the redigestion spike recovery was greater than 125 percent.

39. The reported result was rejected because the laboratory failed to perform the reanalysis due to insufficient sample volume.

40. The reported results was qualified because the laboratory failed to analyze an ending CCB.

Attachment B

Data Validation Report Form

Client Name: PPG Industries	**Project Number:** 60154801-6001
Site Location: PPG GARIS - NonForrest Street at PPG Site 114, Jersey City, NJ	**Project Manager:** Robert Cataldo
Laboratory: Accutest, Dayton, NJ	**Type of Validation:** Full
Laboratory Job No: JB23759	**Date Checked:** 1/15/2013
Validator: Justin Webster	**Peer:** Lisa Krowitz

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X			
Field I.D. included?	X			
Laboratory I.D. included?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6C?		X		The samples were received at the laboratory at 1.3 degrees Celsius. There was no impact to data.
Signed COCs included?	X			
Date of sample collection included?	X			
Date of sample digestion included?	X			
Holding time to digestion met criteria? (Soils -30 days from collection to digestion.)	X			
Date of analysis included?	X			
Holding time to analysis met criteria? (Soils -168 hours from digestion to analysis; Aqueous - 24 hours from collection to analysis.	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			

Definitions: MDL Method Detection Limit; %R Percent Recovery; RL Reporting Limit; RPD Relative Percent Difference; RSD Relative Standard Deviation :Corr Correlation Coefficient.

ITEM	YES	NO	N/A	COMMENTS
Initial calibration documentation included in lab package?	X			
1) Blank plus 4 standards (7196A) or blank plus 3 standards (7199)	X			
2) Correlation coefficient of =0.995 (7196A) or =0.999 (7199)	X			
3) Calibrate daily or each time instrument is set up.	X			
Calibration Check Standard (CCS) for 7196A and Quality Control Sample (QCS) for 7199 Included in Lab Package?	X			
1) %R criteria met? (90 - 110%)	X			
2) Correct frequency of one per every 10 samples	X			
3) CCS and QCS from independent source and at mid level of calibration curve	X			
Calibration Blanks				
1) Analyzed prior to initial calibration standards and after each CCS/QCS?	X			
2) Absolute value should not exceed MDL.	X			
Method Blank, Field Blanks and/or Equipment Blanks Included in Lab Package?	X			
1) Method blank analyzed with each preparation batch?	X			
2) Absolute value should not exceed MDL.	X			
Eh and pH Data				
1) Eh and pH data was included and plotted for all samples?	X			
Soluble Matrix Spike Data Included in Lab Package?	X			
1) Soluble Matrix %R criteria met? (75-125%R).	X			
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?	X			
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Insoluble Matrix Spike Data Included in Lab Package?	X			
1) Insoluble Matrix %R criteria met? (75-125%R).	X			
2) Was the spike concentration around 400 to 800 mg/Kg?	X			
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			

Post Digestion Spike				
1) Post Digestion Spike %R criteria met? (85-115%R).	X			
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?	X			
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Sample Duplicate Data Included in Lab Package?	X			
1) RPD criteria met? (RPD < 20%) if both results are =4x RL or control limit of RL if both results are <4x	X			
2) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Was a Laboratory Control Sample (LCS) Included in Lab Package?	X			
1) %R criteria met? (80-120%R).	X			
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples?	X			
Were any Field Duplicate samples submitted with this SDG?	X			
1) Were Field duplicate RPD criteria met ? (RPD,20% for sample results >4x the RL.	X			The absolute difference was +/-RL for sample results < 4x RL.
Were all sample quantitation and reporting requirements met?	X			
1) Were all solid samples reported with percent solids > 50% ?	X			
2) Were any samples analyzed or reported with dilutions?		X		
Miscellaneous Items				
1) For soils by 7196A, was the pH within a range of 7.0-8.0?	X			
2) For soils by 7199, was the pH within a range of 9.0-9.5?			X	
3) For aqueous by 7196A, was the pH with a range of 1.5-2,5?	X			
4) For soils (3060A), was the digestion temperature 90-95C for at least 60 minutes?	X			
5) For 7199, was each sample injected twice and was the RPD =20?			X	

Matrix Spikes

Sample ID	Compound	Analysis Batch	Matrix Spike	% Recovery	Lower Limit	Upper Limit	RPD	RPD Limit
EF-129-0.5-1.0	CHROMIUM (HEXAVALENT)	GP69243-S1	Soluble	77.3	75	125		
EF-129-0.5-1.0	CHROMIUM (HEXAVALENT)	GP69243-S2	Insoluble	81.7	75	125		

Field Duplicates

Sample ID	Duplicate ID	Compound	Sample Result	Qual	Duplicate Result	Qual	QL	Units	RPD
EF-129-0.5-1.0	EF-129-0.5-1.0X	CHROMIUM (HEXAVALENT)	1.7		1.1		0.43	mg/kg	42.9

Percent Solids

Sample ID	Percent Solids (%)	Status
EF-128-2.0-2.5	85.6	ok @50%
EF-129-0.5-1.0	93.8	ok @50%
EF-129-0.5-1.0X	92.6	ok @50%

SDG#: JB23759
Batch: GN77448
Cr+6 ICAL - 12/27/2012
Soils
(p. 35 of data pkg)

x - concentration	y - response
0	0
0.01	0.009
0.05	0.044
0.1	0.087
0.3	0.268
0.5	0.448
0.8	0.705
1	0.899

				(p. 35 of data pkg)
AECOM Calculated Intercept	-0.0008	OK rounding	Reported intercept	-0.0008
AECOM Slope	0.8936	OK rounding	Reported Slope	0.8936
AECOM Calculated r	0.99992	OK	Reported r	0.99992

LCS calculation	**GP69243-B1**		**pg. 35**		
Background absorbance		0			
Sample absorbance		0.886			
LCS Soluble Instrument Response		0.886			
Instrument Concentration (mg/L)		0.992			
Sample weight (kg)		0.0025			
Percent solids		1			
Dilution Factor		1			
AECOM Calculated LCS Result (mg/kg)		39.7	OK	Reported Result (mg/kg)	39.7

%R = Found/True*100	**GP69243-B1**		**pg. 18**		
True Value (mg/kg)		40.0			
AECOM Calculated %R		99.2	OK rounding	Reported %R	99.3

MS calculation (GP69243-S2)	**EF-129-0.5-1.0**		**pg. 35**		
Background reading		0			
Total absorbance		0.289			
Total absorbance - background		0.289			
Instrument Concentration (mg/L)		0.3243			
Sample weight (kg)		0.00249			
Percent solids		0.938			
Dilution Factor		50			
AECOM Calculated MS Result (mg/kg)		694	OK	Reported Result (mg/kg)	984

%R = Found/True*100	**EF-129-0.5-1.0**		**pg.20**		
True Value (mg/kg)		847			
Native concentration (mg/kg)		1.7			
AECOM Calculated MS Result %R		81.8	OK rounding	Reported %R	81.7

Percent Solids	**EF-129-0.5-1.0**		**pg. 21**		
Empty dish weight (g)=		23.48			
Wet weight (g)=		31.37			
Dry weight (g)=		30.88			
AECOM%solids =		93.8	OK	Reported %solids=	93.8

Reporting Limit	**EF-129-0.5-1.0**		**pgs. 10, 35**		
Low Standard		0.01			
Initial weight (kg)		0.00249			
Final volume (L)		0.1			
Percent solids		0.938			
Dilution Factor		1.00			
AECOM Calculated Reporting Limit		0.43	OK	Reported RL (mg/kg)=	0.43

Sample Calculations

EF-129-0.5-1.0			**pgs. 10, 35**		
Background reading		0.004			
Total absorbance		0.039			
Total absorbance - background		0.035			
Instrument Response (mg/L)		0.040			
Sample weight (kg)		0.00249			
Final Volume (L)		0.1			
Percent solids		0.938			
Dilution Factor		1			
AECOM Calculated Result (mg/kg)		1.71	OK rounding	Reported Result (mg/kg)	1.70

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Data Validation Report

Project:	PPG Phase 3BS WC and PDI Investigation
Laboratory:	Eurofins Lancaster Laboratories Env, LLC, Lancaster PA
Laboratory Job No.:	410194761
Analysis/Method:	Hexavalent Chromium SW846 -7196A/7199
Validation Level:	Full
Site Location/Address:	70 Carteret Avenue, Jersey City, NJ
AECOM Project No:	60635148 WC
Prepared by: Sharon McKechnie /AECOM	Completed on: 12/10/2020
Reviewed by: Waverly Braunstein /AECOM	File Name: 410194761 2020-12-10_DVReport-F.docx

Introduction

The data were reviewed in accordance with the FSP-QAPP and the following NJDEP and / or Region 2 validation Standard Operating Procedure(s) (SOP):

- NJDEP Office of Data Quality SOP 5.A.10, Rev 3 (September 2009), SOP for Analytical Data Validation of Hexavalent Chromium - for USEPA SW-846 Method 3060A, USEPA SW-846 Method 7196A/7199

The results of quality control data analyzed with site samples were used to assess the overall reliability of the data. The following qualifiers were used to identify data quality issues:

U: Indicates the analyte was not detected in the sample above the sample reporting limit.

J: Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

J+: Indicates the analyte was positively identified; the associated numerical value is an estimated quantity with a potential high bias.

J-: Indicates the analyte was positively identified; the associated numerical value is an estimated quantity with a potential low bias.

UJ: Indicates the analyte was not detected above the reporting limit and the reporting limit was approximate.

UB: The analyte concentration is less than or equal to three (3) times the concentration in the associated method/prep blank. The presence of the analyte in the sample is negated (UB) due to laboratory contamination.

JB: The analyte concentration is greater than three (3) times, but less than or equal to ten (10) times the concentration in the associated method/prep blank. The presence of that

analyte in the sample is considered "real". The concentration is quantitatively qualified (JB) due to method blank contamination.

R: The sample result was rejected due to serious deficiencies; the presence or absence of the analyte could not be confirmed.

RA: The sample result was rejected due to NJ specific data validation QC requirements; however, the result is usable for project objectives. Refer to the Data Quality and Usability section in this data validation report for further discussion.

Sample Information

The samples listed below were collected by AECOM on November 4, 2020 as part of the PPG Phase 3BS WC and PDI Investigation Sampling at 70 Carteret Avenue, Jersey City, New Jersey. Only the samples and parameters listed below were validated:

Field ID	Laboratory ID	Matrix	Fraction
P3BS-PDI-TP-1+50-80R-3.7-4.2	410-19476-1	Soil	Hexavalent Chromium
P3BS-PDI-TP-1+35-125R-0.5-1.0	410-19476-2	Soil	Hexavalent Chromium
P3BS-PDI-TP-1+35-125R-1.9-2.4	410-19476-3	Soil	Hexavalent Chromium
P3BS-PDI-TP-1+35-125R-3.2-3.7	410-19476-4	Soil	Hexavalent Chromium
P3BS-PDI-TP-1+50-80R-FB (Field Blank)	410-19476-5	Aqueous	Hexavalent Chromium
P3BS-PDI-4+20-100R-0.8-1.3	410-19477-1	Soil	Hexavalent Chromium
P3BS-PDI-4+20-100R-18.0-18.5	410-19477-10	Soil	Hexavalent Chromium
P3BS-PDI-4+20-100R-20.0-20.5	410-19477-11	Soil	Hexavalent Chromium
P3BS-PDI-4+20-100R-20.0-20.5X (Field Duplicate of P3BS-PDI-4+20-100R-20.0-20.5)	410-19477-12	Soil	Hexavalent Chromium
P3BS-PDI-4+20-100R-FB (Field Blank)	410-19477-13	Aqueous	Hexavalent Chromium
P3BS-PDI-4+20-100R-2.0-2.5	410-19477-2	Soil	Hexavalent Chromium
P3BS-PDI-4+20-100R-4.0-4.5	410-19477-3	Soil	Hexavalent Chromium
P3BS-PDI-4+20-100R-6.0-6.5	410-19477-4	Soil	Hexavalent Chromium
P3BS-PDI-4+20-100R-8.0-8.5	410-19477-5	Soil	Hexavalent Chromium
P3BS-PDI-4+20-100R-10.0-10.5	410-19477-6	Soil	Hexavalent Chromium
P3BS-PDI-4+20-100R-12.0-12.5	410-19477-7	Soil	Hexavalent Chromium
P3BS-PDI-4+20-100R-14.0-14.5	410-19477-8	Soil	Hexavalent Chromium
P3BS-PDI-4+20-100R-16.0-16.5	410-19477-9	Soil	Hexavalent Chromium

The samples were collected following the procedures detailed in the Work Order for the PPG Phase 3BS WC and PDI Investigation at 70 Carteret Avenue, Jersey City, NJ and the Field Sampling Plan/Quality Assurance Project Plan for Non-Residential and Residential Chromium Sites Hudson County, New Jersey (December 2011).

General Comments

The data package was complete. Quality control (QC) issues identified during validation are discussed below. Refer to the Soil Target Analyte Summary Hit List(s) in Attachment A for a listing of

all detected results, qualified results, and associated qualifications, where applicable. The nonconformances for each section discussed below are presented in Attachment B.

MS Results

There were two 7196 batches associated with the samples in this SDG: analytical/prep batches 63351/ 63233 and 63353/ 63241 associated with all samples in this SDG.

Analytical/prep batches 63351/63233

Sample P3BS-PDI-4+20-100R-16.0-16.5 (410-19477-9) was selected for the 7196 soil matrix spike analysis and used for supporting data quality recommendations. The soluble and insoluble matrix spike (MS) recoveries from the first analysis batch were 2% and 44%, respectively. Both MS recoveries did not meet quality control (QC) criteria of 75-125%R and were less than 50%. The post digestion spike (PDS) recovery was 95%, which met the PDS criteria of 85-115%. The laboratory reprepared and reanalyzed all samples and reported them in analytical/prep batches 63353/63241.

Analytical/prep batches 63353/ 63241

The soluble and insoluble MS recoveries from the second 7196 analysis batch using sample P3BS-PDI-4+20-100R-16.0-16.5 (410-19477-9) were 6% and 44%, respectively. Both MS recoveries did not meet the QC criteria of 75-125%R and were less than 50%. The PDS recovery was 93%, which met the PDS criteria of 85-115%. The laboratory was instructed to analyze the samples by method 7199 as a result of the poor MS recoveries.

There were two 7199 batches associated with this SDG: analytical/prep batches 65401/ 64581 associated with samples 410-19476-1 through 4 and 70518/68553 associated with the remaining samples in this SDG.

Analytical/prep batches 65401/ 64581

This batch included samples 410-19476-1 through 4 (reported in 410-19476-1), and MS analyses were not performed on any of these samples. The MS analyses for this batch were performed on sample P3BS-PDI-TP-3+90-80R-3.8-4.3 (410-18991-2, reported in SDG 410-18647-1) and did not use the same native sample as the above mentioned 7196 runs. The soluble and insoluble MS recoveries from this 7199 batch were 37% and 77%, respectively. The soluble MS recovery did not meet QC criteria of 75-125%R and was less than 50%. The PDS recovery was 110%, which met the PDS criteria of 85-115%.

Since the MS recoveries were outside the acceptable QC limit of 75-125%, additional parameters were analyzed to determine if possible matrix interferences could be the cause for the poor matrix spike recoveries. All the soil samples were tested for pH and oxidation reduction potential (ORP) and plotted on an Eh/pH phase diagram chart. From this chart, the source sample for the matrix spike analysis P3BS-PDI-TP-3+90-80R-3.8-4.3 (410-18991-2) was plotted slightly below the phase change line, indicating reducing potential within the sample matrix, incapable of supporting hexavalent chromium. Analyses for ferrous iron, sulfide screen, and total organic carbon (TOC) were performed on the MS source sample to confirm the oxidizing/reducing potential within the sample matrix. The sulfide screen was nondetect, indicating no reducing agents within the sample matrix. However, the ferrous iron (0.42 mg/L) and TOC results (28000 mg/Kg) were positive, indicating potential reducing agents within the sample matrix.

Analytical/prep batches 70518/68553

Based on very low MS recoveries, the MS sample P3BS-PDI-4+20-100R-16.0-16.5 (410-19477-9) and associated samples were reanalyzed using Method 7199. The soluble and insoluble MS

recoveries from the 7199 reanalysis were -79% and 82%, respectively. The soluble MS recovery did not meet QC criteria of 75-125%R and was less than 50%. The PDS recovery was 106%, which met the PDS criteria of 85-115%.

Since the MS recoveries were outside the acceptable QC limit of 75-125%, additional parameters were analyzed to determine if possible matrix interferences could be the cause for the poor matrix spike recoveries. All the soil samples were tested for pH and oxidation reduction potential (ORP) and plotted on an Eh/pH phase diagram chart. From this chart, the source sample for the matrix spike analysis P3BS-PDI-4+20-100R-16.0-16.5 (410-19477-9) was plotted on the phase change line, yielding inconclusive information about the ability of the sample matrix to support hexavalent chromium. Analyses for ferrous iron, sulfide screen, and total organic carbon (TOC) were performed on the MS source sample to help confirm the oxidizing/reducing potential within the sample matrix. The sulfide screen was nondetect, indicating no reducing agents within the sample matrix. However, the ferrous iron (0.025 mg/L) and TOC results (76000 mg/Kg) were positive, indicating potential reducing agents within the sample matrix.

In all cases, the highest detected hexavalent chromium result or the nondetect hexavalent chromium result with the lowest reporting limit (RL) from among all batches was reported for each soil sample. Qualification actions for the reported results are detailed below.

MS recoveries from the 7196 batches were all less than 50%; but the insoluble MS recovery from 7199 batch 70518/68553 was 82%; therefore, the reported positive and nondetect hexavalent chromium results in all the soil samples reported from analytical/prep batches 63351/63233, 63353/63241,and 70518/68553 were qualified (J-/UJ) and may have a low bias due to the poor MS recoveries.

Results for samples 410-19476-1 through 4 were reported from the 7199 analysis (analytical/prep batches 65401/ 64581) because they are higher than the results from the 7196 analysis. However, the native sample used to prepare the matrix spike sample associated with this batch is not the same one used for the 7196 analysis and was not used to take validation action on these samples. Since the requirements were met to reanalyze samples 410-19476-1 through 4 due to low 7196 MS %Rs, these samples will be qualified as estimated (J-/UJ) based on AECOM professional judgment and since the insoluble MS %R in analytical/prep batch 65401/ 64581 was greater than 50%. These results may have a low bias.

Field Duplicate Results

The field duplicate pair in this SDG was P3BS-PDI-4+20-100R-20.0-20.5 (410-19477-11) and P3BS-PDI-4+20-100R-20.0-20.5X (410-19477-12).

The relative percent difference for the reported hexavalent chromium field duplicate results exceeded the QC acceptance RPD; therefore, the reported hexavalent chromium results in soil samples in this SDG were qualified as estimated (J/UJ).

Data Quality and Usability

In general, these data appear to be valid and may be used for decision-making purposes. No data were rejected. Qualified results are discussed in attachments A and B below.

Based on MS soluble and insoluble recoveries, the hexavalent chromium soil samples in this SDG were qualified as estimated (J-/UJ) and may have a low bias. The highest detected hexavalent chromium result or the nondetect hexavalent chromium result with the lowest reporting limit (RL) was reported for each soil sample.

Qualified results, if applicable, are presented in Attachments A and B.

ATTACHMENTS

Attachment A: Target Analyte Summary Hit Lists(s)

Attachment B: Data Validation Report Form

Attachment A

Target Analyte Summary Hit List(s)

Soil Target Analyte Summary Hit List (Hexavalent Chromium)

Site Name PPG Phase 3BS WC and PDI Investigation
Sampling Date November 4, 2020
Lab Name/ID Eurofins Lancaster Laboratories Env, LLC, Lancaster PA
SDG No 410194761
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID P3BS-PDI-4+20-100R-FB and P3BS-PDI-TP-1+50-80R-FB

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
P3BS-PDI-4+20-100R-14.0-14.5	410-19477-8	CHROMIUM (HEXAVALENT)	U	U	UJ	0.62	Qualify	2,3
P3BS-PDI-4+20-100R-8.0-8.5	410-19477-5	CHROMIUM (HEXAVALENT)	U	3600	3600 J-	34	Qualify	2,3
P3BS-PDI-4+20-100R-0.8-1.3	410-19477-1	CHROMIUM (HEXAVALENT)	U	0.85J	0.85 J-	0.95	Qualify	2,3,4
P3BS-PDI-4+20-100R-10.0-10.5	410-19477-6	CHROMIUM (HEXAVALENT)	U	240	240J-	29	Qualify	2,3
P3BS-PDI-4+20-100R-12.0-12.5	410-19477-7	CHROMIUM (HEXAVALENT)	U	4.6	4.6 J-	1.1	Qualify	2,3
P3BS-PDI-4+20-100R-16.0-16.5	410-19477-9	CHROMIUM (HEXAVALENT)	U	68	68 J-	10	Qualify	2,3
P3BS-PDI-4+20-100R-18.0-18.5	410-19477-10	CHROMIUM (HEXAVALENT)	U	330	330 J-	61	Qualify	2,3
P3BS-PDI-4+20-100R-2.0-2.5	410-19477-2	CHROMIUM (HEXAVALENT)	U	8.0	8.0 J-	1.0	Qualify	2,3
P3BS-PDI-4+20-100R-20.0-20.5	410-19477-11	CHROMIUM (HEXAVALENT)	U	10	10 J-	1.2	Qualify	2,3
P3BS-PDI-4+20-100R-20.0-20.5X	410-19477-12	CHROMIUM (HEXAVALENT)	U	1.1J	1.1 J-	1.2	Qualify	2,3,4
P3BS-PDI-4+20-100R-4.0-4.5	410-19477-3	CHROMIUM (HEXAVALENT)	U	1.6	1.6 J-	1.0	Qualify	2,3
P3BS-PDI-4+20-100R-6.0-6.5	410-19477-4	CHROMIUM (HEXAVALENT)	U	0.37J	0.37 J-	0.94	Qualify	2,3,4
P3BS-PDI-TP-1+35-125R-0.5-1.0	410-19476-2	CHROMIUM (HEXAVALENT)	U	5.1	5.1 J-	0.95	Qualify	2,3
P3BS-PDI-TP-1+35-125R-1.9-2.4	410-19476-3	CHROMIUM (HEXAVALENT)	U	3.2	3.2 J-	1.0	Qualify	2,3
P3BS-PDI-TP-1+35-125R-3.2-3.7	410-19476-4	CHROMIUM (HEXAVALENT)	U	1.2	1.2 J-	1.0	Qualify	2,3
P3BS-PDI-TP-1+50-80R-3.7-4.2	410-19476-1	CHROMIUM (HEXAVALENT)	U	1.9	1.9 J-	0.95	Qualify	2,3

Note: A “U” under Method Blank column indicates a nondetect result.
A “U” under the Laboratory Sample Result and Validation Sample Result columns indicates a nondetect result.

NJDEP Laboratory Footnote

1. The result was rejected for MS recoveries less than 50%.

2. The result was qualified for MS recoveries <75% but >50%.

3. The result was qualified for field duplicate precision.

4. The result was between the RL and the MDL and qualified as estimated.

Attachment B

Data Validation Report Form

Client Name: PPG Industries	**Project Number:** 60635148 WC
Site Location: PPG Phase 3BS WC and PDI Investigation Sampling, Jersey City, NJ	**Project Manager:** Cameron Dixon
Laboratory: Eurofins Lancaster Laboratories Env, LLC, Lancaster PA	**Type of Validation:** Full
Laboratory Job No(s): 410194761	**Date Checked:** 12/10/2020
Validator: Sharon McKechnie	**Peer:** Waverly Braunstein

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X			
Field I.D. included?	X			
Laboratory I.D. included?	X			
Did data package sample IDs match sample IDs on COC?	X			
Did electronic data deliverable (EDD) sample IDs match COC sample IDs?	X			
Did data package sample IDs match electronic data deliverable (EDD) sample IDs?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6°C?	X			1.4º C, 2.4º C and 3.8º C.
Signed COCs included?	X			
Date of sample collection included?	X			
Date of sample digestion included?	X			
Holding time to digestion met criteria? (Soils -30 days from collection to digestion.)	X			
Date of analysis included?	X			
Holding time to analysis met criteria? (Soils -168 hours from digestion to analysis; Aqueous - 24 hours from collection to analysis.	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			

Definitions: MDL - Method Detection Limit; %R - Percent Recovery; RL - Reporting Limit; RPD - Relative Percent Difference; RSD - Relative Standard Deviation :Corr - Correlation Coefficient.

ITEM	YES	NO	N/A	COMMENTS
Initial calibration documentation included in lab package?	X			
1) Blank plus 4 standards (7196A) or blank plus 3 standards (7199)	X			7196 Analytical batch 63351; 63353, and 7199 Analytical batch 70518,65401
2) Correlation coefficient of =0.995 (7196A) or =0.999 (7199)	X			
3) Calibrate daily or each time instrument is set up.	X			
Calibration Check Standard (CCS) for 7196A and Quality Control Sample (QCS) for 7199 Included in Lab Package?	X			
1) %R criteria met? (90 - 110%)	X			7196 Analytical batch 63351; 63353, and 7199 Analytical batch 70518,65401
2) Correct frequency of one per every 10 samples	X			
3) CCS and QCS from independent source and at mid- level of calibration curve	X			
Calibration Blanks	X			7196 Analytical batch 63351; 63353, and 7199 Analytical batch 70518,65401
1) Analyzed prior to initial calibration standards and after each CCS/QCS?	X			
2) Absolute value should not exceed MDL.	X			
Method Blank, Field Blanks and/or Equipment Blanks Included in Lab Package?	X			MB 410-64581/1-A, MB 410-68553/1-A, MB 410-62333/1 MB 410-63233/1-A, MB 410-63241/1-A, P3BS-PDI-TP-1+50-80R-FB, P3BS-PDI-4+20-100R-FB
1) Method blank analyzed with each preparation batch?	X			
2) Absolute value should not exceed MDL.	X			
Eh and pH Data	X			
1) Eh and pH data was included and plotted for all samples?	X			
Soluble Matrix Spike Data Included in Lab Package?	X			410-19477-9
1) Soluble Matrix %R criteria met? (75-125%R).		X		See table
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?		X		410-19477-9 7196 runs #1 , #2 spiked at 49.8 mg/kg and 49.0 mg/kg, respectively. 7199 runs #1 , #2 spiked at 50.0 mg/kg and 50.0 mg/kg, respectively. The data was not impacted.

ITEM	YES	NO	N/A	COMMENTS
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Insoluble Matrix Spike Data Included in Lab Package?	X			410-19477-9
1) Insoluble Matrix %R criteria met? (75-125%R).		X		See table
2) Was the spike concentration around 400 to 800 mg/Kg?		X		410-19477-9 7196 runs #1 , #2 spiked at 1220 mg/kg and 1180 mg/kg, respectively. 7199 runs #1 , #2 spiked at 1310 mg/kg and 1310 mg/kg, respectively. The data was not impacted.
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Post Digestion Spike	X			410-19477-9
1) Post Digestion Spike %R criteria met? (85-115%R).	X			See table
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?	X			
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Sample Duplicate Data Included in Lab Package?	X			410-19477-9
1) RPD criteria met? (RPD < 20%) if both results are ≥4x RL or control limit of RL if both results are <4x RL.	X			
2) Was a lab duplicate performed at the frequency of 1 per batch or 20 samples?	X			
Was a Laboratory Control Sample (LCS) Included in Lab Package?	X			
1) %R criteria met? (80-120%R).	X			
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples?	X			
Were any Field Duplicate samples submitted with this SDG?	X			SDG was P3BS-PDI-4+20-100R-20.0-20.5 (410-19477-11) and P3BS-PDI-4+20-100R-20.0-20.5X (410-19477-12)
1) Were Field duplicate RPD criteria met ? (RPD ≤20% for sample results >4x the RL.		X		

ITEM	YES	NO	N/A	COMMENTS
Were all sample quantitation and reporting requirements met?	X*			Where not a 100% match, laboratory reported result is within 10% of the reviewer calculated result and the difference could be attributed to rounding.
1) Were all solid samples reported with percent solids >50%?	X			
2) Were any samples analyzed or reported with dilutions?	X			Up to 100x
Miscellaneous Items	X			
1) For soils by 7196A, was the pH within a range of 7.0-8.0?	X			
2) For soils by 7199, was the pH within a range of 9.0-9.5?	X			
3) For aqueous by 7196A, was the pH with a range of 1.5-2.5?	X			
4) For soils (3060A), was the digestion temperature 90-95°C for at least 60 minutes?	X			
5) For 7199, was each sample injected twice and was the RPD $\leq$20?	X			

Matrix Spikes

Sample ID	Lab ID	Analyte	Matrix Spike	% Recovery	Lower Limit	Upper Limit	PDS %	PDS Limit %
P3BS-PDI-4+20-100R-16.0-16.5	410-19477-9	CHROMIUM (HEXAVALENT)	7196 Soluble	2	75	125	95	85-115
P3BS-PDI-4+20-100R-16.0-16.5	410-19477-9	CHROMIUM (HEXAVALENT)	7196 Insoluble	44	75	125		
P3BS-PDI-4+20-100R-16.0-16.5	410-19477-9	CHROMIUM (HEXAVALENT)	7196 Soluble	6	75	125	93	85-115
P3BS-PDI-4+20-100R-16.0-16.5	410-19477-9	CHROMIUM (HEXAVALENT)	7196 Insoluble	44	75	125		
P3BS-PDI-4+20-100R-16.0-16.5	410-19477-9	CHROMIUM (HEXAVALENT)	7199 Soluble	-79	75	125	106	85-115
P3BS-PDI-4+20-100R-16.0-16.5	410-19477-9	CHROMIUM (HEXAVALENT)	7199 Insoluble	82	75	125		
P3BS-PDI-TP-3+90-80R-3.8-4.3	410-18991-2	CHROMIUM (HEXAVALENT)	7199 Soluble	37	75	125	110	85-115
P3BS-PDI-TP-3+90-80R-3.8-4.3	410-18991-2	CHROMIUM (HEXAVALENT)	7199 Insoluble	77	75	125		

Field Duplicate*

Sample ID	Analyte	Sample Result	Duplicate Result	QL	Units	Actions
P3BS-PDI-4+20-100R-20.0-20.5/ P3BS-PDI-4+20-100R-20.0-20.5X	CHROMIUM (HEXAVALENT)	10	1.1	1.2	mg/kg	J all soil samples

	response (shown as y, but in equation as x)	concentration (mg/L) (shown as x, but in equation as y)	
SDG#: 410194761/ Method 7196			
Batch: (analysis) 63353			
Cr+6 ICAL 10/01/20	0	0	
Soil	0.009	0.01	
(p. 460,491 of data pkg)	0.037	0.05	8 point
	0.074	0.1	curve
	0.15	0.2	
	0.367	0.5	
	0.717	1	
	0.91	1.25	

Note that lab uses inverse calculation (as if x is dependent and y is independent)

				(p. 460,491 of data pkg)
AECOM Calculated Offset	-0.002670	OK	Reported Offset	-0.002670
AECOM Slope	1.383	OK	Reported Slope	1.383
AECOM Calculated r	1.000	OK	Reported r	1.000

LCS calculation	**LCS 410-63241/2-A**	**P. 417,466, 493**	**Prep Batch: 63241 Date: 11/07/2020 06:23**	
Background Absorbance	0			
Total absorbance	0.081	p.469		
Total absorbance - background	0.081			
Calculated Instrument Concentration (mg/L)	0.109362	RAW Result	0.109353	OK, Rounding
Sample weight (g)	2.5			
Final Volume (mL)	100			
Dilution Factor	1			
AECOM Calculated LCS Result (mg/Kg)	4.37	OK	Reported Result (mg/Kg)	4.37

%R = Found/True*100	**LCS 410-63241/2-A**	**P. 417,466, 493**		
True Value (mg/kg)	5			
AECOM Calculated %R	87	OK, Rounding	Reported %R	88

MS calculation	**410-19477-A-9-G MSI**	**P.413,497,469**	**Analysis Date: Nov 07, 2020 10:15**	
Background reading	0.001			
Total absorbance	0.305	P.469		
Total absorbance - background	0.304			
Calculated Instrument Concentration (ug/L)	0.417795	RAW Result	0.41776200	OK, Rounding
Sample weight (g)	2.5			
Final Volume (mL)	100			
Percent solids	0.809			
Dilution Factor	25			
AECOM Calculated MS Result (mg/Kg)	516.434	OK, Rounding	Reported Result (mg/Kg)	516.00

%R = Found/True*100	410-19477-A-9-G MSI	P.413,497,469	Analysis Date: Nov 07, 2020 10:15	
True Value (mg/kg)	1180			
Native concentration (mg/Kg)	1.4			
AECOM%R	43.647	OK, Rounding	Reported %R	44.0
Percent Solids	**410-19477-9**	**P.490**	**P3BS-PDI-4+20-100R-16.0-16.5**	
Empty dish weight=	0.81			
Wet weight=	6.15			
Dry weight=	5.13			
AECOM %solids =	80.9	OK	Reported %solids=	80.9
Reporting Limit	**410-19477-9**	**P.392,497,469**	**P3BS-PDI-4+20-100R-16.0-16.5**	
Low Standard (ug/L)	10			
Initial weight (g)	2.51			
Final volume (L)	0.1			
Percent solids	0.809			
Dilution Factor	1			
Reporting Limit	0.49	<10%D, OK Rounding	Reported RL (mg/Kg)=	0.52
Sample Calculations	**410-19477-9**	**P.392,497,469**	**P3BS-PDI-4+20-100R-16.0-16.5**	
Background reading	0.02	P.469		
Total absorbance	0.043			
Total absorbance - background	0.023			
Calculated Instrument Concentration (ug/L)	0.029141085	RAW Result	0.02913900	OK Rounding
Sample weight (g)	2.51			
Final Volume (mL)	100			
Percent solids	0.809			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	1.435	OK	Reported Result (mg/Kg)	1.40

SDG#: 410194761/ Method 7196
Batch: (analysis) 63351
Cr+6 ICAL 10/01/20
Soil
(p. 460,491 of data pkg)

response (shown as y, but in equation as x)	concentration (mg/L) (shown as x, but in equation as y)
0	0
0.009	0.01
0.037	0.05
0.074	0.1
0.15	0.2
0.367	0.5
0.717	1
0.91	1.25

8 point curve

Note that lab uses inverse calculation (as if x is dependent and y is independent)

				(p. 460,491 of data pkg)
AECOM Calculated Offset	-0.002670	OK	Reported Offset	-0.002670
AECOM Slope	1.383	OK	Reported Slope	1.383
AECOM Calculated r	1.000	OK	Reported r	1.000

LCS calculation	**410-63233/2-A**	**P. 417,466, 493**	**Prep Batch: 63233 Date: 11/05/2020 04:22**	
Background Absorbance	0			
Total absorbance	0.085	p.466		
Total absorbance - background	0.085			
Calculated Instrument Concentration (mg/L)	0.114894	RAW Result	0.114885	OK
Sample weight (g)	2.5			
Final Volume (mL)	100			
Dilution Factor	1			
AECOM Calculated LCS Result (mg/Kg)	4.60	OK	Reported Result (mg/Kg)	4.60

%R = Found/True*100	**410-63233/2-A**	**P. 417,466, 493**		
True Value (mg/kg)	5			
AECOM Calculated %R	92	OK	Reported %R	92

MS calculation	**410-19477-A-9-C MSI**	**P.413,494,466**	**Analysis Date: Nov 07, 2020 06:35**	
Background reading	0	P.466		
Total absorbance	0.308			
Total absorbance - background	0.308			
Calculated Instrument Concentration (ug/L)	0.423328	RAW Result	0.42329400	OK, Rounding
Sample weight (g)	2.45			
Final Volume (mL)	100			
Percent solids	0.809			
Dilution Factor	25			
AECOM Calculated MS Result (mg/Kg)	533.952	OK, Rounding	Reported Result (mg/Kg)	534.00

%R = Found/True*100	**410-19477-A-9-C MSI**	**P.413,494,466**	**Analysis Date: Nov 07, 2020 06:35**	
True Value (mg/kg)	1220			
Native concentration (mg/Kg)	0			
AECOM%R	43.767	OK, Rounding	Reported %R	44.0

Percent Solids	**410-19477-9**	**P.490**	**P3BS-PDI-4+20-100R-16.0-16.5**	
Empty dish weight=	0.81			
Wet weight=	6.15			
Dry weight=	5.13			
AECOM %solids =	80.9	OK	Reported %solids=	80.9

Reporting Limit	**410-19477-9**	**P.392,494,466**	**P3BS-PDI-4+20-100R-16.0-16.5**	
Low Standard (ug/L)	10			
Initial weight (g)	2.54			
Final volume (L)	0.1			
Percent solids	0.809			
Dilution Factor	1			
Reporting Limit	0.49	<10%D, OK Rounding	Reported RL (mg/Kg)=	0.51

Sample Calculations	**410-19477-9**	**P.392,494,466**	**P3BS-PDI-4+20-100R-16.0-16.5**	
Background reading	0.015			
Total absorbance	0.014			
Total absorbance - background	-0.001			
Calculated Instrument Concentration (ug/L)	-0.004053584	RAW Result	-0.00405300	OK Rounding
Sample weight (g)	2.54			
Final Volume (mL)	100			
Percent solids	0.809			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	-0.197	OK, reported as nondetect	Reported Result (mg/Kg)	0.17U

SDG: 410194761/ Method 7199 **Batch 70518**	y - response (area) mAU*min	x - concentration ug/L		
Cr+6 ICAL 11/24/2020	0.00	0.0000	Level 1	
Soil	8002	10.0000	Level 2	
(p.205-207 of data package)	35574	50.0000	Level 3	
All samples	71698	100.0000	Level 4	
	142943	200.0000	Level 5	
	213065	300	Level 6	
			(p.205-207 of data package)	
AECOM Calculated Offset	453.9143	OK	Reported Offset	453.9143
AECOM Slope	709.9371	OK	Reported Slope	710.1545
AECOM Calculated r	1.0000	OK	Reported r	1.0000

LCS calculation	**LCS 410-68553/2-A**	**P. 63,312**	24_Nov_2020 18_15.d	File ID
Highest replicate response (AREA, mAU*min)	75188	P.313		
Instrument Concentration (ug/L)	105.269	On column raw result	105.2	OK
Sample weight	0.0025			
Percent solids	1			
Dilution Factor	1			
AECOM Calculated LCS Result (mg/Kg)	4.21	OK	Reported Result (mg/Kg)	4.21

%R = Found/True*100	**LCS 410-68553/2-A**	**P. 63,312**	24_Nov_2020 18_15.d	File ID
True Value (mg/kg)	5			
AECOM Calculated %R	84	OK	Reported %R	84

MS calculation	**410-19477-9 MSS**	**P. 56,333**	P3BS-PDI-4+20-100R-16.0-16.5 MSS	Sample ID
Highest replicate response (mAU*min)	73844		24_Nov_2020 21_06.d	File ID
Instrument Concentration (ug/L)	103.3755	On column raw result	103.3	OK
Sample weight	0.00247			
Percent solids	0.809			
Dilution Factor	5			
AECOM Calculated MS Result (mg/Kg)	25.867	OK	Reported Result (mg/Kg)	25.90

%R = Found/True*100	**410-19477-9 MSS**	**P. 56,333**	P3BS-PDI-4+20-100R-16.0-16.5 MSS	Sample ID
True Value (mg/kg)	50		24_Nov_2020 21_06.d	File ID
Native concentration (mg/Kg)	65			
%R	-78.27	OK	Reported %R	-79.00

Percent Solids	**410-19477-9**	**P.490**	P3BS-PDI-4+20-100R-16.0-16.5	Sample ID
Empty dish weight=	0.81			
Wet weight=	6.15			
Dry weight=	5.13			
AECOM %solids =	80.9	OK	Reported %solids=	80.9

Reporting limit	**410-19477-9**	**P.150**	P3BS-PDI-4+20-100R-16.0-16.5	Sample ID
Low Standard X 2	0.01		25_Nov_2020 12_05.d	File ID
Initial weight (Kg)	0.00246			
Final volume (L)	0.1000			
Percent solids	80.9			
Dilution Factor	10.0			
Reporting Limit	10.05	OK	Reported RL (mg/Kg)=	10.00

Sample Calculations	**410-19477-9**	**P.150**	P3BS-PDI-4+20-100R-16.0-16.5	Sample ID
Background reading from highest response	0		25_Nov_2020 12_05.d	File ID
Instrument Response highest response	96433			
Total response for replicate 1	96433			
Instrument Response (ug/L)	135.194	On Column Amount	135.2	OK
Sample weight (Kg)	0.00246			
Final Volume (L)	0.1			
Percent solids	80.900			
Dilution Factor	10.00			
AECOM Calculated Result (mg/Kg)	67.9	OK	Reported Result (mg/Kg)	68.0

SDG: 410194761/ Method 7199 **Batch 65401**	y - response (area) mAU*min	x - concentration ug/L	
Cr+6 ICAL 11/11/2020	0.00	0.0000	Level 1
Soil	6195	10.0000	Level 2
(p.152-154 of data package 410-18647-1)	24135	50.0000	Level 3
410-19476-1 through 4	51696	100.0000	Level 4
	102313	200.0000	Level 5
	152105	300	Level 6

(p.152-154 of data package 410-18647-1)

AECOM Calculated Offset	251.2629	OK	Reported Offset	251.2629
AECOM Slope	507.4794	OK	Reported Slope	507.6348
AECOM Calculated r	0.9997	OK	Reported r	1.0000

LCS calculation	**LCS 410-64581/2-A**	**P. 60,303**	11_Nov_2020 19_10.d	File ID
Highest replicate response (AREA, mAU*min)	55207	P.304		
Instrument Concentration (ug/L)	108.292	On column raw result	108.3	OK
Sample weight	0.0025			
Percent solids	1			
Dilution Factor	1			
AECOM Calculated LCS Result (mg/Kg)	4.33	OK	Reported Result (mg/Kg)	4.33

%R = Found/True*100	**LCS 410-64581/2-A**	**P. 60,303**	11_Nov_2020 19_10.d	File ID
True Value (mg/kg)	5			
AECOM Calculated %R	87	OK	Reported %R	87

MS calculation (reported in 410-18647-1)	**410-18991-2 MSS**	**P. 224**	P3BS-PDI-TP-3+90-80R-3.8-4.3 MSS	Sample ID
Highest replicate response (mAU*min)	41967		11_Nov_2020 20_58.d	File ID
Instrument Concentration (ug/L)	82.2018	On column raw result	82.2	OK
Sample weight	0.00244			
Percent solids	0.875			
Dilution Factor	5			
AECOM Calculated MS Result (mg/Kg)	19.251	OK	Reported Result (mg/Kg)	19.20

%R = Found/True*100	**410-18991-2 MSS**	**P. 224**	P3BS-PDI-TP-3+90-80R-3.8-4.3 MSS	Sample ID
True Value (mg/kg)	46.8		11_Nov_2020 20_58.d	File ID
Native concentration (mg/Kg)	1.8			
%R	37.29	OK	Reported %R	37.00

Percent Solids	**410-18991-2**	**P.693**	P3BS-PDI-TP-3+90-80R-3.8-4.3	Sample ID
Empty dish weight=	0.81			
Wet weight=	7.21			
Dry weight=	6.41			
AECOM %solids =	87.5	OK	Reported %solids=	87.5

Reporting limit	**410-18991-2**	**P.123**	P3BS-PDI-TP-3+90-80R-3.8-4.3	Sample ID
Low Standard X 2	0.01		11_Nov_2020 20_22.d	File ID
Initial weight (Kg)	0.00246			
Final volume (L)	0.1000			
Percent solids	87.5			
Dilution Factor	1.0			
Reporting Limit	0.93	OK	Reported RL (mg/Kg)=	0.93

Sample Calculations	**410-18991-2**	**P.123**	P3BS-PDI-TP-3+90-80R-3.8-4.3	Sample ID
Background reading from highest response	0		11_Nov_2020 20_22.d	File ID
Instrument Response highest response	52571			
Total response for replicate 1	52571			
Instrument Response (ug/L)	103.097	On Column Amount		OK
Sample weight (Kg)	0.00246			
Final Volume (L)	0.1			
Percent solids	87.5			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	4.8	OK	Reported Result (mg/Kg)	4.8

7199 Replicate RPDs				
Sample ID	**Rep 1 (ppm)**	**Rep 2 (ppm)**	**RPD%**	**RPD Criteria ≤20**
Batch 65401				
410194761	20068	19724	1.7%	OK
410194762	54245	53479	1.4%	OK
410194763	31940	32256	1.0%	OK
410194764	11162	12029	7.5%	OK
410194765	13096	13231	1.0%	OK
Batch 70518				
410194771	13096	13231	1.0%	OK
410194772	113696	112643	0.9%	OK
410194773	22436	21680	3.4%	OK
410194774	5706	6007	5.1%	OK
410194775	115210	116316	1.0%	OK
410194776	112772	117452	4.1%	OK
410194777	59403	58852	0.9%	OK
410194778	ND	ND	#VALUE!	NA
410194779	92513	96433	4.1%	OK
4101947710	75701	77591	2.5%	OK
4101947711	125720	123152	2.1%	OK
4101947712	13025	13316	2.2%	OK

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Data Validation Report

Project:	PPG Phase 3BS WC and PDI Investigation
Laboratory:	Eurofins Lancaster Laboratories Env, LLC, Lancaster PA Eurofins Test America, Edison, NJ (TOC)
Laboratory Job No.:	410196731
Analysis/Method:	Hexavalent Chromium SW846 -7196A/7199
Validation Level:	Full
Site Location/Address:	70 Carteret Avenue, Jersey City, NJ
AECOM Project No:	60635148 WC
Prepared by: Sharon McKechnie /AECOM	Completed on: 11/22/2020
Reviewed by: Charlene Flint /AECOM	File Name: 410196731 2020-11-22_DVReport-F.docx

Introduction

The data were reviewed in accordance with the FSP-QAPP and the following NJDEP and / or Region 2 validation Standard Operating Procedure(s) (SOP):

- NJDEP Office of Data Quality SOP 5.A.10, Rev 3 (September 2009), SOP for Analytical Data Validation of Hexavalent Chromium - for USEPA SW-846 Method 3060A, USEPA SW-846 Method 7196A/7199
- ICP-MS Data Validation, SOP No. HW-3b Revision 1 (September 2016).

The results of quality control data analyzed with site samples were used to assess the overall reliability of the data. The following qualifiers were used to identify data quality issues:

U: Indicates the analyte was not detected in the sample above the sample reporting limit.

J: Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

J+: Indicates the analyte was positively identified; the associated numerical value is an estimated quantity with a potential high bias.

J-: Indicates the analyte was positively identified; the associated numerical value is an estimated quantity with a potential low bias.

UJ: Indicates the analyte was not detected above the reporting limit and the reporting limit was approximate.

UB: The analyte concentration is less than or equal to three (3) times the concentration in the associated method/prep blank. The presence of the analyte in the sample is negated (UB) due to laboratory contamination.

JB: The analyte concentration is greater than three (3) times, but less than or equal to ten (10) times the concentration in the associated method/prep blank. The presence of that analyte in the sample is considered "real". The concentration is quantitatively qualified (JB) due to method blank contamination.

R: The sample result was rejected due to serious deficiencies; the presence or absence of the analyte could not be confirmed.

RA: The sample result was rejected due to NJ specific data validation QC requirements; however, the result is usable for project objectives. Refer to the Data Quality and Usability section in this data validation report for further discussion.

Sample Information

The samples listed below were collected by AECOM on November 5, 2020 as part of the PPG Phase 3BS WC and PDI Investigation Sampling at 70 Carteret Avenue, Jersey City, New Jersey. Only the samples and parameters listed below were validated:

Field ID	Laboratory ID	Matrix	Fraction
P3BS-PDI-4+80-105R-20.0-20.5	410-19673-1	Soil	Hexavalent Chromium
P3BS-PDI-4+80-105R-20.5-21.0	410-19673-2	Soil	Hexavalent Chromium
P3BS-PDI-3+90-120R-4.5-5.0	410-19675-1	Soil	Hexavalent Chromium
P3BS-PDI-3+90-120R-6.5-7.0	410-19675-2	Soil	Hexavalent Chromium
P3BS-PDI-3+90-120R-8.5-9.0	410-19675-3	Soil	Hexavalent Chromium
P3BS-PDI-3+90-120R-10.5-11.0	410-19675-4	Soil	Hexavalent Chromium
P3BS-PDI-3+90-120R-12.5-13.0	410-19675-5	Soil	Hexavalent Chromium
P3BS-PDI-TP-0+80-250R-0.8-1.3	410-19676-1	Soil	Hexavalent Chromium
P3BS-PDI-TP-0+80-250R-2.2-2.7	410-19676-2	Soil	Hexavalent Chromium
P3BS-PDI-TP-0+80-250R-2.2-2.7X (Field Duplicate of sample P3BS-PDI-TP-0+80-250R-2.2-2.7)	410-19676-3	Soil	Hexavalent Chromium
P3BS-PDI-TP-0+80-250R-2.7-3.2	410-19676-4	Soil	Hexavalent Chromium
P3BS-PDI-TP-0+80-250R-FB (Field Blank)	410-19676-5	Aqueous	Hexavalent Chromium

The samples were collected following the procedures detailed in the Work Order for the PPG Phase 3BS WC and PDI Investigation at 70 Carteret Avenue, Jersey City, NJ and the Field Sampling Plan/Quality Assurance Project Plan for Non-Residential and Residential Chromium Sites Hudson County, New Jersey (December 2011).

General Comments

The data package was complete. Quality control (QC) issues identified during validation are discussed below. Refer to the Soil Target Analyte Summary Hit List(s) in Attachment A for a listing of all detected results, qualified results, and associated qualifications, where applicable. The nonconformances for each section discussed below are presented in Attachment B.

MS Results

Sample P3BS-PDI-4+80-105R-20.0-20.5 (410-19673-1) was selected for the soil MS analysis and used for supporting data quality recommendations. The soluble and insoluble MS recoveries from the initial

analysis were -1067% and 82%. The soluble MS recovery did not meet quality control (QC) criteria of 75-125%, but since the spiked sample concentration was greater than 4 times the spiked concentration, no further action was taken. The PDS recovery was 95%, which met the PDS criteria of 85-115%.

All the soil samples were tested for pH and oxidation reduction potential (ORP) and plotted on an Eh/pH phase diagram chart. From this chart, the source sample P3BS-PDI-4+80-105R-20.0-20.5 (410-19673-1) for the matrix spike analyses was plotted on the phase change line, indicating inconclusive information about the potential within the sample matrix.

Percent Solids

The moisture content for sample P3BS-PDI-4+80-105R-20.5-21.0 (410-19673-2) exceeded the acceptable limit of 50%; therefore, the result was qualified as estimated (J/UJ) for low percent solids.

Data Quality and Usability

In general, these data appear to be valid and may be used for decision-making purposes. No data were rejected. Qualified results, if applicable, are presented in Attachments A and B.

The highest detected hexavalent chromium result or the nondetect hexavalent chromium result with the lowest RL was reported for each soil sample.

The result for P3BS-PDI-4+80-105R-20.5-21 was qualified as estimated for high percent moisture.

ATTACHMENTS

Attachment A: Target Analyte Summary Hit Lists(s)

Attachment B: Data Validation Report Form

Attachment A

Target Analyte Summary Hit List(s)

Soil Target Analyte Summary Hit List (Hexavalent Chromium)

Site Name PPG Phase 3BS WC and PDI Investigation
Sampling Date November 5, 2020
Lab Name/ID Eurofins Lancaster Laboratories Env, LLC, Lancaster PA
SDG No 410196731
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID P3BS-PDI-TP-0+80-250R-FB

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
P3BS-PDI-4+80-105R-20.0-20.5	410-19673-1	CHROMIUM (HEXAVALENT)	U	4600	4600	120		
P3BS-PDI-4+80-105R-20.5-21.0	410-19673-2	CHROMIUM (HEXAVALENT)	U	U	UJ	8.5	Qualify	1
P3BS-PDI-TP-0+80-250R-0.8-1.3	410-19676-1	CHROMIUM (HEXAVALENT)	U	2.7	2.7	2.3		
P3BS-PDI-TP-0+80-250R-2.2-2.7	410-19676-2	CHROMIUM (HEXAVALENT)	U	2.3J	2.3	2.4		
P3BS-PDI-TP-0+80-250R-2.2-2.7X	410-19676-3	CHROMIUM (HEXAVALENT)	U	2.8	2.8	2.6		
P3BS-PDI-TP-0+80-250R-2.7-3.2	410-19676-4	CHROMIUM (HEXAVALENT)	U	5.9	5.9	2.6		

Note: A “U” under Method Blank column indicates a nondetect result.
A “U” under the Laboratory Sample Result and Validation Sample Result columns indicates a nondetect result.

NJDEP Laboratory Footnote

1. The reported value was qualified for high moisture content.

Attachment B

Data Validation Report Form

Client Name: PPG Industries	**Project Number:** 60635148 WC
Site Location: PPG Phase 3BS WC and PDI Investigation Sampling, Jersey City, NJ	**Project Manager:** Cameron Dixon
Laboratory: Eurofins Lancaster Laboratories Env, LLC, Lancaster PA	**Type of Validation:** Full
Laboratory Job No(s): 410196731	**Date Checked:** 11/22/2020
Validator: Sharon McKechnie	**Peer:** Charlene Flint

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X			
Field I.D. included?	X			
Laboratory I.D. included?	X			
Did data package sample IDs match sample IDs on COC?	X			
Did electronic data deliverable (EDD) sample IDs match COC sample IDs?	X			
Did data package sample IDs match electronic data deliverable (EDD) sample IDs?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6°C?	X			1.9°C, 2.4°C, 3.2°C, 3.3°C and 4.2°C
Signed COCs included?	X			
Date of sample collection included?	X			
Date of sample digestion included?	X			
Holding time to digestion met criteria? (Soils -30 days from collection to digestion.)	X			
Date of analysis included?	X			
Holding time to analysis met criteria? (Soils -168 hours from digestion to analysis; Aqueous - 24 hours from collection to analysis.	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			

Definitions: MDL - Method Detection Limit; %R - Percent Recovery; RL - Reporting Limit; RPD - Relative Percent Difference; RSD - Relative Standard Deviation :Corr - Correlation Coefficient.

ITEM	YES	NO	N/A	COMMENTS
Initial calibration documentation included in lab package?	X			
1) Blank plus 4 standards (7196A) or blank plus 3 standards (7199)	X			Analytical batch 62856
2) Correlation coefficient of =0.995 (7196A) or =0.999 (7199)	X			
3) Calibrate daily or each time instrument is set up.	X			
Calibration Check Standard (CCS) for 7196A and Quality Control Sample (QCS) for 7199 Included in Lab Package?	X			
1) %R criteria met? (90 - 110%)	X			Analytical batch 62856
2) Correct frequency of one per every 10 samples	X			
3) CCS and QCS from independent source and at mid- level of calibration curve	X			
Calibration Blanks	X			Analytical batch 62856
1) Analyzed prior to initial calibration standards and after each CCS/QCS?	X			
2) Absolute value should not exceed MDL.	X			
Method Blank, Field Blanks and/or Equipment Blanks Included in Lab Package?	X			MB 410-63341/1-A P3BS-PDI-TP-0+80-250R-FB
1) Method blank analyzed with each preparation batch?	X			
2) Absolute value should not exceed MDL.	X			
Eh and pH Data	X			
1) Eh and pH data was included and plotted for all samples?	X			
Soluble Matrix Spike Data Included in Lab Package?	X			410-19673-1
1) Soluble Matrix %R criteria met? (75-125%R).	X			See table
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?		X		410-19673-1 spiked at 56.4 mg/kg. Spiked sample greater than 4x spike.
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			

ITEM	YES	NO	N/A	COMMENTS
Insoluble Matrix Spike Data Included in Lab Package?	X			410-19673-1
1) Insoluble Matrix %R criteria met? (75-125%R).	X			See table
2) Was the spike concentration around 400 to 800 mg/Kg?		X		410-19673-1 spiked at 1320 mg/kg. No impact on data.
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Post Digestion Spike	X			410-19673-1
1) Post Digestion Spike %R criteria met? (85-115%R).	X			See table
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?	X			
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Sample Duplicate Data Included in Lab Package?	X			410-19673-1
1) RPD criteria met? (RPD < 20%) if both results are ≥4x RL or control limit of RL if both results are <4x	X			
2) Was a lab duplicate performed at the frequency of 1 per batch or 20 samples?	X			
Was a Laboratory Control Sample (LCS) Included in Lab Package?	X			
1) %R criteria met? (80-120%R).	X			
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples?	X			
Were any Field Duplicate samples submitted with this SDG?	X			P3BS-PDI-TP-0+80-250R-2.2-2.7/ P3BS-PDI-TP-0+80-250R-2.2-2.7X
1) Were Field duplicate RPD criteria met ? (RPD ≤20% for sample results >4x the RL.	X			Parent 2.3 mg/kg/DUP 2.8 mg/kg – 19.6% OK
Were all sample quantitation and reporting requirements met?	X			Where not a 100% match, laboratory reported result is within 10% of the reviewer calculated result and the difference could be attributed to rounding.
1) Were all solid samples reported with percent solids >50%?		X		see table
2) Were any samples analyzed or reported with dilutions?	X			Up to 200x

ITEM	YES	NO	N/A	COMMENTS
Miscellaneous Items	X			
1) For soils by 7196A, was the pH within a range of 7.0-8.0?	X			
2) For soils by 7199, was the pH within a range of 9.0-9.5?			X	
3) For aqueous by 7196A, was the pH with a range of 1.5-2.5?	X			
4) For soils (3060A), was the digestion temperature 90-95°C for at least 60 minutes?	X			
5) For 7199, was each sample injected twice and was the RPD ≤20?			X	

Matrix Spikes

Sample ID	Analyte	Matrix Spike	Spiked sample concentration mg/kg	4x Spike mg/kg	% Recovery	Lower Limit	Upper Limit	PDS %	PDS Limit %
P3BS-PDI-4+80-105R-20.0-20.5	CHROMIUM (HEXAVALENT)	Soluble	4600	56.4x4=225.6	-1067	75	125	95	85-115
P3BS-PDI-4+80-105R-20.0-20.5	CHROMIUM (HEXAVALENT)	Insoluble	4600	1320x4=5280	82	75	125		

Percent Solids

Sample ID	Percent Solids (%)	Status
P3BS-PDI-4+80-105R-20.5-21.0	49.3	<50%

SDG#: 410-19673-1/ Method 7196 **Batch: (analysis) 63947**	response (shown as y, but in equation as x)	concentration (mg/L) (shown as x, but in equation as y)	
Cr+6 ICAL	0	0	
Soil	0.009	0.01	
(p. 105 of data pkg)	0.037	0.05	8 point
	0.074	0.1	curve
	0.15	0.2	
	0.367	0.5	
	0.717	1	
	0.91	1.25	

Note that lab uses inverse calculation (as if x is dependent and y is independent)

				(p. 105 of data pkg)
AECOM Calculated Offset	-0.00267	OK	Reported Offset	-0.00267
AECOM Slope	1.383	OK	Reported Slope	1.383
AECOM Calculated r	1.000	OK	Reported r	1.000

LCS calculation	**410-63341/2-A**	**P.65,96**	**Prep Batch: 63341**	
Background Absorbance	0		LCS Source: WC_HX_5ppm_00001	
Total absorbance	0.083	p. 96		
Total absorbance - background	0.083			
Calculated Instrument Concentration (mg/L)	0.112	RAW Result p.96	0.112	OK
Sample weight (g)	2.5			
Final Volume (mL)	100			
Dilution Factor	1			
AECOM Calculated LCS Result (mg/Kg)	4.49	OK, rounding	Reported Result (mg/Kg)	4.48

%R = Found/True*100	**410-63341/2-A**	**P.65,96**		
True Value (mg/kg)	5	p.65		
AECOM Calculated %R	90	OK	Reported %R	90

MS calculation	**410-19673-A-1-C MSI**	**P. 63,97**	**410-19673-1**	
Background reading	0.001		Batch ID: 63947 Date: 11/09/2020 19:07	
Total absorbance	0.381			
Total absorbance - background	0.38			
Calculated Instrument Concentration (ug/L)	0.522912	RAW Result p.97	0.52287	OK rounding
Sample weight (g)	2.57			
Final Volume (mL)	100			
Percent solids	0.712			
Dilution Factor	200			
AECOM Calculated MS Result (mg/Kg)	5715	OK, rounding, <10 %D	Reported Result (mg/Kg)	5720.0

%R = Found/True*100	**410-19673-A-1-C MSI**	**P. 63,97**	**410-19673-1**	
True Value (mg/kg)	1320	p.63		
Native concentration (mg/Kg)	4600			
AECOM%R	84.5	OK, rounding, <10 %D	Reported %R	82.0

Percent Solids	**410-19673-1**		**P. 150**		
Empty dish weight=		0.8	p. 150	**P3BS-PDI-4+80-105R-20.0-20.5**	
Wet weight=		6.97			
Dry weight=		5.19			
AECOM %solids =		71.2	OK	Reported %solids=	71.2

Reporting Limit	**410-19673-1**		**P. 30**		
Low Standard (ug/L)		10		**P3BS-PDI-4+80-105R-20.0-20.5**	
Initial weight (g)		2.5			
Final volume (L)		0.1			
Percent solids		0.712			
Dilution Factor		200			
Reporting Limit		112	OK, rounding, <10 %D	Reported RL (mg/Kg)=	120

Sample Calculations	**410-19673-1**		**P.30**	**P3BS-PDI-4+80-105R-20.0-20.5**	
Background reading		0.001			
Total absorbance		0.296	P.138		
Total absorbance - background		0.295			
Calculated Instrument Concentration (ug/L)		0.405347	RAW Result p.96	0.405315	OK rounding
Sample weight (g)		2.5			
Final Volume (mL)		100			
Percent solids		0.712			
Dilution Factor		200			
AECOM Calculated Result (mg/Kg)		4554	OK, rounding, <10 %D	Reported Result (mg/Kg)	4600

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Data Validation Report

Project:	PPG P3BS Post-Excavation		
Laboratory:	Eurofins, Lancaster, PA		
Laboratory Job No.:	410-39487-1		
Analysis/Method:	Hexavalent Chromium SW846 3060A/7196A		
Validation Level:	Full		
Site Location/Address:	70 Carteret Avenue, Jersey City, New Jersey		
AECOM Project No:	60635148.CS.DM		
Prepared by:	Charlene Livingston Flint /AECOM	Completed on:	08/23/2021
Reviewed by:	Waverly Braunstein/AECOM	File Name:	410394871_2021-08-23_DVReport-ID

Introduction

The data were reviewed in accordance with the FSP-QAPP and the following NJDEP validation Standard Operating Procedure (SOP):

- NJDEP Office of Data Quality SOP 5.A.10, Rev 3 (September 2009), SOP for Analytical Data Validation of Hexavalent Chromium - for USEPA SW-846 Method 3060A, USEPA SW-846 Method 7196A and USEPA SW-846 Method 7199;

The results of quality control data analyzed with site samples were used to assess the overall reliability of the data. The following qualifiers were used to identify data quality issues:

U: Indicates the analyte was not detected in the sample above the sample reporting limit.

J: Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

J+: Indicates the analyte was positively identified; the associated numerical value is an estimated quantity with a potential high bias.

J-: Indicates the analyte was positively identified; the associated numerical value is an estimated quantity with a potential low bias.

UJ: Indicates the analyte was not detected above the reporting limit and the reporting limit was approximate.

UB: The analyte concentration is less than or equal to three (3) times the concentration in the associated method/prep blank. The presence of the analyte in the sample is negated (UB) due to laboratory contamination.

JB: The analyte concentration is greater than three (3) times, but less than or equal to ten (10) times the concentration in the associated method/prep blank. The presence of that analyte in

the sample is considered "real". The concentration is quantitatively qualified (JB) due to method blank contamination.

R: The sample result was rejected due to serious deficiencies; the presence or absence of the analyte could not be confirmed.

RA: The sample result was rejected but is still considered usable.

Sample Information

The samples listed below were collected by AECOM on May 12, 2021 as part of the P3BS Post-Excavation at 70 Carteret Avenue, Jersey City, New Jersey. Only the samples and parameters listed below were validated.

Field ID	Laboratory ID	Matrix	Analyses
P3BS-J45A-SW-2-2.5	410-39487-1	Soil	Hexavalent Chromium
P3BS-J45A-SW-0.1-0.6	410-39487-2	Soil	Hexavalent Chromium
FB-2021-05-12 (Field Blank)	410-39487-3	Aqueous	Hexavalent Chromium

The samples were collected following the procedures detailed in the Work Order for P3BS Post-Excavation at 70 Carteret Avenue, Jersey City, NJ and the Field Sampling Plan/Quality Assurance Project Plan for Non-Residential and Residential Chromium Sites Hudson County, New Jersey (December 2011).

General Comments

The data package was complete. Quality control (QC) issues identified during validation are discussed below. Refer to the Target Analyte Summary Hit List(s) in Attachment A for a listing of all detected results, qualified results, and associated qualifications, where applicable. The nonconformances for each section discussed below are presented in Attachment B.

The chain of custody (COC) did not include sample FB-2021-05-12 (410-39487-3). Sample was analyzed and results reported.

MS Results

Method 7196

Sample P3BS-J45A-SW-2-2.5 (410-39487-1) was selected for the soil matrix spike analysis and used for supporting data quality recommendations. The soluble matrix spike (MSS) and insoluble matrix spike (MSI) recoveries from the initial batch were 40% and 89%, respectively; which did not meet quality control (QC) criteria of 75-125%R and one was less than 50%. The post digestion spike (PDS) recovery was 98% which met the PDS criteria of 85-115%.

Based on poor MS recoveries, less than 75%R, the MS and associated samples were reanalyzed using Method 7196. The soluble and insoluble matrix spike recoveries from the re-analysis were 72% and 87%, respectively; the soluble MS recovery did not meet the quality control criteria of 75-125%R. The post spike result for the re-analysis batch was recovered at 91%, which met the PDS criteria of 85-115%.

Since the soluble and/or insoluble MS recoveries were outside the acceptable QC limit of 75-125%, additional parameters were analyzed to determine if possible matrix interferences could be the

cause for the poor matrix spike recoveries. All the soil samples were tested for pH and oxidation reduction potential (ORP) and plotted on an Eh/pH phase diagram chart. From this chart, the source sample for the matrix spike analysis was plotted below the phase change line, indicating reducing potential within the sample matrix, incapable of supporting hexavalent chromium. Analyses for ferrous iron, sulfide screen, and total organic carbon (TOC) were performed on the MS source sample to confirm the reducing potential within the sample matrix. The sulfide screen and ferrous iron were reported as nondetect, indicating no reducing agents within the sample matrix; however, the TOC results (12000 mg/Kg) were positive, indicating potential reducing agents within the sample.

MS recoveries from the initial and re-analyses did not meet the MS QC requirements, but at least one MS recovery was greater than 50%; therefore, the reported nondetect hexavalent chromium results in all the soil samples in this SDG were qualified as estimated (J-/UJ) due to the poor MS recoveries. The highest detected hexavalent chromium result or the nondetect hexavalent chromium result with the lowest reporting limit (RL) from among all batches was reported for each soil sample.

Data Quality and Usability

In general, these data appear to be valid and may be used for decision-making purposes. No data were rejected. Qualified results are presented in Attachments A and B.

The hexavalent chromium soil results in this SDG are usable as estimated values with the potential for low bias due to low MS recovery. The MS sample matrix appears to be reducing based on the Eh-pH plot and the presence of TOC. The highest detected hexavalent chromium result or the nondetect hexavalent chromium result with the lowest reporting limit (RL) from among all batches was reported for each soil sample.

ATTACHMENTS

Attachment A: Target Analyte Summary Hit List(s)

Attachment B: Data Validation Report Form

Attachment A

Target Analyte Summary Hit List(s)

Soil Target Analyte Summary Hit List (Hexavalent Chromium)
Site Name PPG P3BS Post-Excavation
Sampling Date May 12, 2021
Lab Name/ID Eurofins, Lancaster, PA
SDG No 410-39487-1 (J39487-1)
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID FB-2021-05-12

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
P3BS-J45A-SW-2-2.5	410-39487-1	CHROMIUM (HEXAVALENT)	U		UJ	0.62	Qualify	1
P3BS-J45A-SW-0.1-0.6	410-39487-2	CHROMIUM (HEXAVALENT)	U	1.0 J	1.0 J-	0.63	Qualify	1

Note: A "U" under Method Blank column indicates a nondetect result.
A "U" under the Laboratory Sample Result and Validation Sample Result columns indicates a nondetect result at the RL.

NJDEP Laboratory Footnote

1. The result was qualified as estimated because the MS recoveries were less than 75%, but at least one recovery was above 50%.

Attachment B

Data Validation Report Form

Client Name: PPG Industries	**Project Number:** 60635146.CS.DM
Site Location: P3BS Post-Excavation, Jersey City, New Jersey	**Project Manager:** Cameron Dixon
Laboratory: Eurofins, Lancaster, PA	**Type of Validation:** Full
Laboratory Job No: 410-39487-1	**Date Checked:** 08/23/2021
Validator: Charlene Livingston Flint	**Peer:** Waverly Braunstein

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X			
Field I.D. included?	X			
Laboratory I.D. included?	X			
Did data package sample IDs match sample IDs on COC?	X			COC did not include FB-2021-05-12 (410-39487-3)
Did electronic data deliverable (EDD) sample IDs match COC sample IDs?	X			
Did data package sample IDs match electronic data deliverable (EDD) sample IDs?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6 ºC?	X			6.1 ºC
Signed COCs included?	X			
Date of sample collection included?	X			FB-2021-05-12 (410-39487-3) was not included on the COC
Date of sample digestion included?	X			
Holding time to digestion met criteria? (Soils -30 days from collection to digestion.)	X			
Date of analysis included?	X			
Holding time to analysis met criteria? (Soils - 168 hours from digestion to analysis; Aqueous - 24 hours from collection to analysis.	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			
Definitions: MDL - Method Detection Limit; %R - Percent Recovery; RL - Reporting Limit; RPD - Relative Percent Difference; RSD - Relative Standard Deviation :Corr - Correlation Coefficient.				

ITEM	YES	NO	N/A	COMMENTS
Initial calibration documentation included in lab package?	X			
1) Blank plus 4 standards (7196A) or blank plus 3 standards (7199)	X			
2) Correlation coefficient of =0.995 (7196A) or =0.999 (7199)	X			
3) Calibrate daily or each time instrument is set up.	X			
Calibration Check Standard (CCS) for 7196A and Quality Control Sample (QCS) for 7199 Included in Lab Package?	X			
1) %R criteria met? (90 - 110%)	X			
2) Correct frequency of one per every 10 samples	X			
3) CCS and QCS from independent source and at mid- level of calibration curve	X			
Calibration Blanks	X			
1) Analyzed prior to initial calibration standards and after each CCS/QCS?	X			
2) Absolute value should not exceed MDL.	X			
Method Blank, Field Blanks and/or Equipment Blanks Included in Lab Package?	X			MB 410-125779/1, 410-126263/1-A, 410-125715/1-A and FB-2021-05012,
1) Method blank analyzed with each preparation batch?	X			
2) Absolute value should not exceed MDL.	X			All ND
Eh and pH Data	X			
1) Eh and pH data was included and plotted for all samples?	X			
Soluble Matrix Spike Data Included in Lab Package?	X			P3BS-J45A-SW-2-2.5 (410-39487-1)
1) Soluble Matrix %R criteria met? (75-125%R).		X		See table
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?		X		Spiked at 45.1 and 44.2 mg/kg. No impact on data.
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Insoluble Matrix Spike Data Included in Lab Package?	X			P3BS-J45A-SW-2-2.5 (410-39487-1)
1) Insoluble Matrix %R criteria met? (75-125%R).	X			
2) Was the spike concentration around 400 to 800 mg/Kg?		X		Spiked at 1340 and 902 mg/kg. No impact on data.
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Post Digestion Spike	X			

ITEM	YES	NO	N/A	COMMENTS
1) Post Digestion Spike %R criteria met? (85-115%R).	X			
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?	X			
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Sample Duplicate Data Included in Lab Package?	X			P3BS-J45A-SW-2-2.5 (410-39487-1)
1) RPD criteria met? (RPD < 20%) if both results are ≥4x RL or control limit of ± RL if both results are <4xRL.	X			Both ND
2) Was a sample duplicate analyzed at the frequency of 1 per batch or 20 samples?	X			
Was a Laboratory Control Sample (LCS) Included in Lab Package?	X			
1) %R criteria met? (80-120%R).	X			
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples?	X			
Were any Field Duplicate samples submitted with this SDG?		X		
1) RPD criteria met? (RPD < 20%) if both results are ≥4x RL or control limit of ± RL if both results are <4xRL.			X	
Were all sample quantitation and reporting requirements met?	X			
1) Were all solid samples reported with percent solids > 50%?	X			
2) Were any samples analyzed or reported with dilutions?	X			4x Dilution P3BS-J45A-SW-2-2.5 and P3BS-J45A-SW-0.1-0.6
Miscellaneous Items	X			
1) For soils by 7196A, was the pH within a range of 7.0-8.0?	X			
2) For soils by 7199, was the pH within a range of 9.0-9.5?	X			
3) For aqueous by 7196A, was the pH with a range of 1.5-2.5?	X			
4) For soils (3060A), was the digestion temperature 90-95C for at least 60 minutes?	X			
5) For 7199, was each sample injected twice and was the RPD ≤20?			X	

Matrix Spikes

Sample ID	Lab ID	Batch ID	Analyte	Matrix Spike	% Recovery	Lower Limit	Upper Limit	PDS %	PDS Limit	Action
P3BS-J45A-SW-2-2.5	410-39487-1	125778	CHROMIUM (HEXAVALENT)	Soluble	40	75	125	98	85-115	**Estimate (J-/UJ)**
P3BS-J45A-SW-2-2.5	410-39487-1		CHROMIUM (HEXAVALENT)	Insoluble	89	75	125			
P3BS-J45A-SW-2-2.5	410-39487-1	126282	CHROMIUM (HEXAVALENT)	Soluble	72	75	125	91	85-115	**Estimate (J-/UJ)**
P3BS-J45A-SW-2-2.5	410-39487-1		CHROMIUM (HEXAVALENT)	Insoluble	87	75	125			

Percent Solids

Sample ID	Percent Solids (%)	Status
P3BS-J45A-SW-2-2.5	89.5	ok @50%
P3BS-J45A-SW-0.1-0.6	86.9	ok @50%

SDG#: J42744-1/ Method 7196	y - response	x - concentration
Batch: 113586-0		
Cr+6 ICAL 3/27/21	0	0
Soil	0.008	0.009997
(p. 175 of data pkg)	0.036	0.049985
	0.073	0.09997
	0.143	0.19994
	0.365	0.4998
	0.718	0.9996
	0.884	1.25

(p. 175 of data pkg)

AECOM Calculated Offset	-0.0027	OK	Reported Offset	-0.0027
AECOM Slope	1.4060	OK	Reported Slope	1.406
AECOM Calculated r	0.99992	OK	Reported r	1.00000

LCS calculation	**410-125715/2-A**	**P. 50, 113**		
Background Absorbance	0			
Total absorbance	0.081			
Total absorbance - background	0.081			
Instrument Concentration (mg/L)	0.111			
Sample weight (kg)	0.0025			
Final Volume (L)	0.1			
Dilution Factor	1			
AECOM Calculated LCS Result (mg/Kg)	4.45	OK	Reported Result (mg/Kg)	4.45

%R = Found/True*100	**410-125715/2-A**	**P. 50, 113**		
True Value (mg/kg)	5.0			
AECOM Calculated %R	88.9	OK,	Reported %R	89.0

MS calculation	**410-39487-1 MSS**	**P. 46, 113**	**P3BS-J45A-SW-2-2.5**	
Background reading	0			
Total absorbance	0.073			
Total absorbance - background	0.073			
Instrument Concentration (mg/L)	0.09991			
Sample weight (kg)	0.00248			
Final Volume (L)	0.1			
Percent solids	0.895			
Dilution Factor	4			
AECOM Calculated MS Result (mg/Kg)	18.0	OK	Reported Result (mg/Kg)	18.0

%R = Found/True*100	**410-39487-1 MSS**	**P. 46, 113**	**P3BS-J45A-SW-2-2.5**	
True Value (mg/kg)	45.1			
Native concentration (mg/Kg)	0			
AECOM%R	39.9	OK	Reported %R	40.0

Percent Solids	**410-39487-1**	**P. 27, 111**	**P3BS-J45A-SW-2-2.5**	
Empty dish weight=	0.79			
Wet weight=	6.01			
Dry weight=	5.46			
AECOM %solids =	89.5	OK	Reported %solids=	89.5

Reporting Limit	**410-39487-1**	**P. 27, 113**	**P3BS-J45A-SW-2-2.5**
Low Standard	0.01		

Sample weight (kg)	0.00245			
Final volume (L)	0.1			
Percent solids	0.895			
Dilution Factor	4			
Reporting Limit	1.82	OK, rounding	Reported RL (mg/Kg)=	1.9

Sample Calculations	**P3BS-J45A-SW-2-2.5**	**P. 27, 113**	**P3BS-J45A-SW-2-2.5**	
Background reading	0			
Total absorbance	0			
Total absorbance - background	0			
Instrument Concentration (mg/L)	-0.003			
Sample weight (kg)	0.00245			
Final Volume (L)	0.1			
Percent solids	0.895			
Dilution Factor	5			
AECOM Calculated Result (mg/Kg)	-0.61	OK, <MDL, Reported ND	Reported Result (mg/Kg)	1.9 U

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Data Validation Report

Project	PPG – GA EF	Page 1
Laboratory	Test America, NJ	
Laboratory Job No.	460-25481	
Analysis/Method	TAL Metals (Limited – Sb, Cr, Ni, Tl, V) SW-846 3050B/6010B/7471A	
Validation Level	QC Summary Review (Limited)	
Site Location/Address	Garfield Avenue, Soil RI, Site 114, Jersey City, NJ	
AECOM Project Number	60154801.0007	
Prepared by Sharon McKechnie/AECOM	Completed on: May 27, 2011	
Reviewed by Lisa Krowitz/AECOM	File Name: 2011-05-27 TAL Metals DV Report 460-25481 F.docx	

Introduction

The results of quality control data analyzed with site samples were used to assess the overall reliability of the data. The following qualifiers were used to identify data quality issues:

U: Indicates the analyte was not detected in the sample above the sample reporting limit.

J: Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

UJ: Indicates the analyte was not detected above the reporting limit and the reporting limit was approximate.

R: The sample result was rejected due to serious deficiencies; the presence or absence of the analyte could not be confirmed.

Sample Information

The samples listed below were collected by AECOM on April 18, 2011 as part of the Garfield Avenue Soil RI sampling task at PPG Site 114, Jersey City, New Jersey.

Field ID	Laboratory ID	Matrix	Fraction
EF-B21-2.5	460-25481-3	Soil	TAL Metals
EF-B20-2.5	460-25481-7	Soil	TAL Metals
EF-B18-2.5	460-25481-11	Soil	TAL Metals
EF-B26-7.0	460-25481-14	Soil	TAL Metals

Field ID	Laboratory ID	Matrix	Fraction
EF-B26-12.5	460-25481-17	Soil	TAL Metals
EF-B26-17.5	460-25481-20	Soil	TAL Metals
EF-B26-22.5	460-25481-21	Soil	TAL Metals
EF-B25-6.5	460-25481-23	Soil	TAL Metals
EF-B25-11.5	460-25481-25	Soil	TAL Metals
EF-B25-17.5	460-25481-27	Soil	TAL Metals
EF-B25-21.5	460-25481-28	Soil	TAL Metals
EF-B24-6.5	460-25481-30	Soil	TAL Metals
EF-B24-11.5	460-25481-33	Soil	TAL Metals
EF-B24-17.5	460-25481-35	Soil	TAL Metals
EB041811 (Equipment blank collected 4/18/11)	460-25481-38	Aqueous	TAL Metals

Soil samples were collected following the procedures detailed in the Approved Remedial Investigation Work Plan-Soil Non-Residential Chromate Production Waste Sites 114, 132, 133, 135, 137, 143, and 186 (March 2011).

General Comments

The data package was complete. Quality control (QC) issues identified during validation are discussed below. Selected results were qualified as estimated for certain QC nonconformances. Refer to the Target Analyte Summary Hit List for a listing of all detected results, qualified results, and associated qualifications, where applicable.

Matrix Spike Results

Some matrix spike/matrix spike duplicates (MS/MSD) for mercury, aqueous metals, and solid metals batches were performed on non-site specific samples or samples from other SDGs. No actions were taken for MS and/or MSD nonconformances from non-site specific samples due to potential differences in the sample matrices. Refer to Attachments A and B for the MS/MSD nonconformances and qualified results.

Sample Reporting Limits

Selected soil and/or aqueous reporting limits exceeded the NJDEP Default Impact to GW Soil Screening Levels and/or NJDEP Specific GW Quality Criteria, respectively: The non-detect results with reporting limits that exceeded the NJDEP standards are presented in the attached Data Validation Report Form.

Data Quality and Recommendations

In general, these data appear to be valid and may be used for decision-making purposes. With the exception of the qualified results, all TAL metals results were accepted as reported by the laboratory.

Attachments

Attachment A Target Analyte Summary Hitlist(s)

Attachment B Data Validation Report Form

Attachment A

Target Analyte Summary Hitlist(s)

Soil Target Analyte Summary Hit List

Site Name Garfield Avenue Soil RI, Site 114, Jersey City, NJ
Sampling Date April 18, 2011
Lab Name/ID Test America, Edison, NJ
SDG No 460-25350
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID EB041811

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
EF-B18-2.5	460-25481-11	ANTIMONY	U	5.8	5.8	2.3	Qualify	15
EF-B18-2.5	460-25481-11	CHROMIUM	U	75.9	75.9	2.3		
EF-B18-2.5	460-25481-11	NICKEL	U	36.9	36.9	9.3		
EF-B18-2.5	460-25481-11	VANADIUM	U	13.7	13.7	11.6		
EF-B20-2.5	460-25481-7	ANTIMONY	U	U	U	2.2	Qualify	15
EF-B20-2.5	460-25481-7	CHROMIUM	U	76.8	76.8	2.2		
EF-B20-2.5	460-25481-7	NICKEL	U	19.3	19.3	9.0		
EF-B20-2.5	460-25481-7	VANADIUM	U	23.4	23.4	11.2		
EF-B21-2.5	460-25481-3	ANTIMONY	U	2.2	2.2	2.2	Qualify	15
EF-B21-2.5	460-25481-3	CHROMIUM	U	69.3	69.3	2.2		
EF-B21-2.5	460-25481-3	NICKEL	U	65.0	65.0	9.0		
EF-B21-2.5	460-25481-3	VANADIUM	U	26.5	26.5	11.2		
EF-B24-11.5	460-25481-33	ANTIMONY	U	3.6	3.6	2.5	Qualify	15
EF-B24-11.5	460-25481-33	CHROMIUM	U	25.1	25.1	2.5		
EF-B24-11.5	460-25481-33	NICKEL	U	20.2	20.2	10.2		
EF-B24-11.5	460-25481-33	VANADIUM	U	20.6	20.6	12.7		
EF-B24-17.5	460-25481-35	ANTIMONY	U	U	U	6.1	Qualify	15

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
EF-B24-17.5	460-25481-35	CHROMIUM	U	28.4	28.4	6.1		
EF-B24-17.5	460-25481-35	NICKEL	U	20.1	20.1	24.3		
EF-B24-17.5	460-25481-35	VANADIUM	U	42.9	42.9	30.4		
EF-B24-22.5	460-25481-36	ANTIMONY	U	U	U	4.2	Qualify	15
EF-B24-22.5	460-25481-36	CHROMIUM	U	20.1	20.1	4.2		
EF-B24-22.5	460-25481-36	NICKEL	U	18.0	18.0	16.7		
EF-B24-22.5	460-25481-36	VANADIUM	U	32.1	32.1	20.9		
EF-B24-6.5	460-25481-30	ANTIMONY	U	U	U	2.7	Qualify	15
EF-B24-6.5	460-25481-30	CHROMIUM	U	223	223	2.7		
EF-B24-6.5	460-25481-30	NICKEL	U	19.1	19.1	10.8		
EF-B24-6.5	460-25481-30	VANADIUM	U	25.1	25.1	13.5		
EF-B25-11.5	460-25481-25	ANTIMONY	U	6.2	6.2	2.6	Qualify	15
EF-B25-11.5	460-25481-25	CHROMIUM	U	462	462	2.6		
EF-B25-11.5	460-25481-25	NICKEL	U	98.6	98.6	10.4		
EF-B25-11.5	460-25481-25	VANADIUM	U	31.8	31.8	13.1		
EF-B25-17.5	460-25481-27	ANTIMONY	U	U	U	3.6	Qualify	15
EF-B25-17.5	460-25481-27	CHROMIUM	U	21.4	21.4	3.6		
EF-B25-17.5	460-25481-27	NICKEL	U	15.6	15.6	14.3		
EF-B25-17.5	460-25481-27	VANADIUM	U	31.9	31.9	17.9		
EF-B25-21.5	460-25481-28	ANTIMONY	U	U	U	4.8	Qualify	15
EF-B25-21.5	460-25481-28	CHROMIUM	U	10.3	10.3	4.8		
EF-B25-21.5	460-25481-28	NICKEL	U	9.8	9.8	19.0		
EF-B25-21.5	460-25481-28	VANADIUM	U	16.6	16.6	23.8		
EF-B25-6.5	460-25481-23	ANTIMONY	U	U	U	2.5	Qualify	15
EF-B25-6.5	460-25481-23	CHROMIUM	U	40.1	40.1	2.5		
EF-B25-6.5	460-25481-23	NICKEL	U	21.5	21.5	9.9		
EF-B25-6.5	460-25481-23	VANADIUM	U	19.3	19.3	12.3		
EF-B26-12.5	460-25481-17	ANTIMONY	U	52.8	52.8	14.4	Qualify	15

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
EF-B26-12.5	460-25481-17	NICKEL	U	626	626	57.6		
EF-B26-12.5	460-25481-17	VANADIUM	U	384	384	72.0		
EF-B26-12.5	460-25481-17	CHROMIUM	U	36400	36400	72.0		
EF-B26-17.5	460-25481-20	ANTIMONY	U	U	U	7.3	Qualify	15
EF-B26-17.5	460-25481-20	CHROMIUM	U	25.9	25.9	7.3		
EF-B26-17.5	460-25481-20	NICKEL	U	24.4	24.4	29.2		
EF-B26-17.5	460-25481-20	VANADIUM	U	27.3	27.3	36.5		
EF-B26-22.5	460-25481-21	ANTIMONY	U	U	U	7.3	Qualify	15
EF-B26-22.5	460-25481-21	CHROMIUM	U	214	214	7.3		
EF-B26-22.5	460-25481-21	NICKEL	U	30.9	30.9	29.0		
EF-B26-22.5	460-25481-21	VANADIUM	U	39.1	39.1	36.3		
EF-B26-7.0	460-25481-14	ANTIMONY	U	1.4	1.4	2.5	Qualify	15
EF-B26-7.0	460-25481-14	NICKEL	U	206	206	9.9		
EF-B26-7.0	460-25481-14	VANADIUM	U	202	202	12.4		
EF-B26-7.0	460-25481-14	CHROMIUM	U	3110	3110	6.2		

Note: The “U” under Method Blank column indicates a nondetect result
The “U” under the Laboratory Sample Result and Validation Sample Result columns indicate a nondetect result at the RL.

NJ DEP Hitlist Footnotes:

1) The value reported is less than or equal to 3x the value in the method blank. It is the policy of NJDEP-DPFSR to negate the reported value due to probable foreign contamination unrelated to the actual sample. The end-user, however, is alerted that a reportable quantity of the analyte was detected.

2) The value reported is greater than three (3) but less than ten (10) times the value in the method blank and is considered "real". However, the reported value must be quantitatively qualified "J" due to the method blank contamination. The "B" qualifier alerts the end-user to the presence of this analyte in the method blank.

3) The value reported is less than or equal to 3x the value in the trip/field blank. It is the policy of NJDEP-DPFSR to negate the reported value as due to probable foreign contamination unrelated to the actual sample. The end-user, however, is alerted that a reportable quantity of the analyte was detected.

4.) The value reported is greater than 3x but less than ten (10) the value in the trip/field blank and is considered "real". However, the reported value must be quantitatively qualified "J" due to trip/field blank contamination.

5.) The concentration reported by the laboratory is incorrectly calculated.

6.) The laboratory failed to report the presence of the analyte in the sample.

7.) The reported metal value was qualified because the Calibration Verification Standard was not within the recovery range (90-110 percent).

8) In the MS/MSD Sample Analysis, this analyte fell outside the control limits of 20% RPD. Therefore, the result was qualified.

9.) This analyte was qualified because the laboratory performed the MS/MSD Analysis on a field blank.

10) The reported analyte was qualified because the associated Calibration Blank result was greater than the MDL.

11) The reported value was qualified because serial dilution analysis was not within QC limit of 10% D.

12) This analyte is rejected because the laboratory exceeded the holding time for digestion and analysis.

13) The laboratory subtracted the method blank from the sample result. The reviewer's calculation has added the method blank result to the reported concentration.

14) The photocopy submitted is illegible. Therefore, the QA reviewer cannot read the laboratory's reported concentration result.

15) The reported or nondetected value was qualified because the MS/MSD spike recovery was less than 75 percent.

16) The reported value was qualified because the MS/MSD spike recovery was greater than 125 percent.

17) The non-detected value was qualified (UJ) because the MS/MSD spike recovery was less than 75 percent. The possibility of a false negative exists.

18) In the field duplicate analysis this analyte fell outside of the RPD control limits. Therefore, the result was qualified.

19) The laboratory failed to analyze an MS/MSD for the particular matrix. Therefore, the result was rejected.

20) The reported or nondetect value was qualified with an uncertain bias because the MS %R and MSD %R had opposing biases.

21) In the soil laboratory duplicate analysis this analyte fell outside of the control limits of 35% RPD. Therefore, the result was qualified.

22) The reported or nondetected value was rejected because the MS/MSD spike recovery was less than 10 percent.

23) The reported analyte was qualified (J) because the associated sample result was greater than the MDL but less than the RL.

24) The reported value was qualified because the percent solids was <50%

Attachment B

Data Validation Report Form

Client Name: PPG Industries	**Project Number:** 60154801-0007
Site Location: PPG- Garfield Avenue Soil RI, Site 114, Jersey City, NJ	**Project Manager:** Robert Cataldo
Laboratory: Test America, New Jersey	**(Limited) or Full Validation (circle one)**
Laboratory Job No: 460-25481	**Date Checked:** 5/27/2011
Validator: Sharon McKechnie	**Peer Review:** Lisa Krowitz

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X	X*		*See attached table "Dilutions and Reporting Limits". Elevated reporting limits due to sample dilutions.
Field I.D. included?	X			
Laboratory I.D. included?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6ºC?	X			0.6ºC and 3.8ºC. No qualifications for 0.6 ºC minor nonconformance
Signed COCs included?	X			
Date of sample collection included?	X			Collected 4/18/2011
Date of sample digestion included?	X			
Date of analysis included?	X			
Holding time met QC criteria? Metals -180 days from sample collection Mercury – 28 days from sample collection If HT exceeded by - ≤ 10 days, J/UJ all results - > 10 days, R all results	X			See attached table "Hold Times"
Method reference included?	X			
Laboratory Case Narrative included?	X			
Sample Dilutions	X			See attached table "Dilutions and Reporting Limits""
Field Duplicates ("x "appended to sample ID) (RPD calculation on separate sheet)			X	None this SDG

Definitions: MDL – Method Detection Limit; %R – Percent Recovery; RL – Reporting Limit; RPD – Relative Percent Difference; RSD – Relative Standard Deviation :Corr – Correlation Coefficient.

Comments

Selected metals in all soil samples were reanalyzed within hold time

QA/QC CHECKLIST FOR TAL METALS ANALYSIS

ITEM	YES	NO	N/A	COMMENTS
Initial Calibration Documentation Included in Lab Package?			X	**Not reviewed for limited validation**
1. Calibrate daily or each time instrument is set up?. If no, reject (R) data. 2. ICP (6010) - Blank plus 1standard? If no, reject (R) data. 3. Hg (7470/7471) – Blank plus 5 standards? If no, reject (R) data.				
Initial Calibration Verification Standard (ICV) for ICP (6010) and Initial Calibration Check Standard (ICCS) for Hg (7470/7471) Included in Lab Package?			X	**Not reviewed for limited validation**
1. Analyzed immediately after initial calibration? If no, reject (R) data. 2. %R criteria met? (90 - 110%). If no, J positive results for affected analyte(s) if %R between 80-89% and 111-120% and indicate bias UJ non-detect results for affected analyte(s) if R% between 80-89% R all data for affected analyte(s) if <80% or >120% 3. Spot check ICV/ICCS results for several analytes				
Continuing Calibration Verification Standard (CCV) for ICP (6010) and Calibration Check Standard (CCS) for Hg (7470/7471) included in Lab Package?			X	**Not reviewed for limited validation**
1. Analyzed immediately after each ICV/ICC/CB and after every 10 samples? If no, reject (R) data. 2. CCS and CCV from independent source and at mid level of calibration curve. If no, reject (R) data. 3. %R criteria met? (90 - 110%) If no, J positive results for affected analyte(s) if %R between 80-89% and 111-120% and indicate bias UJ non-detect results for affected analyte(s) if %R between 80-89% R all data for affected analyte(s) if %R <80% or >120% 4. Spot check CCV/CCS results for several analytes				
Low Calibration Standard (CRI) included in Lab Package?			X	**Not reviewed for limited validation**
1. %R criteria met? - 50 - 150% for Co, Mn, Zn by ICP-MS, PB, Tl by 6010) - 70-130% all others If no, refer to ILM05.4 NJ SOP 5.A.2 for actions.				
Calibration Blanks			X	**Not reviewed for limited validation**
1. Analyzed immediately after daily calibration and after each ICV/ICC/CCV/CCS, and after every 10 samples? If no, reject (R) data. 2. Absolute value ≤ 3xIDL? If no, - if sample result ≤ 10xCB result, qualify affected analyte(s) in associated samples with CB - if sample result > 10xCB result, no qualification				
Method Blank included in Lab Package?	X			
1, Method blank analyzed with each preparation batch or every SDG, or 1/20 samples? If no, reject (R) data, except no aqueous MB required for FB/EB if only soil samples were analyzed. 2. Method blank analyzed 1/20 samples? If – MB 1/25, J sample results from 21-25 – MB > 1/25, R sample results after 25th sample 3. MB result nondetect? If no, - Sample result ≤ 3xMB, negate UB - Sample result <3xMB, but ≤10xMB, JB - Sample result > 10xMB, no qualification 4. Negative MB result reported? If yes, -Positive sample result ≤ 10xMB, qualify estimated, biased low (J) -Non-detect sample result, qualify UJ, may be false non-detect				1. Yes 2. 1/ batch 3. Yes 4.No
Field Blanks/Equipment Blanks included in Lab Package?	X			**Blanks apply to samples collected during same week as blank**
1, FB/EB result nondetect? If no, - Sample result ≤ 3xFB/EB, negate U - Sample result <3xFB/EB, but ≤10xFB/EB, J - Sample result > 10xFB/EB, no qualification				EB041811, all ND

ITEM	YES	NO	N/A	COMMENTS
ICP Interference Check Sample (ICS) included in Lab Package?			X	**Not reviewed for limited validation**
1. Analyzed at beginning of analytical run? If no, reject (R) data. 2. %R criteria met? (80-120%) If no, %R > 120%, no qualification if sample result non-detect %R between 121-150%, J positive results, biased high %R between 50-79%, J/UJ results, biased low %R <50% or >150%, reject (R) result 3. Spot check accuracy of %Rs				
Matrix Spike/Matrix Spike Duplicate Data Included in Lab Package?	X			**MSD also used as laboratory duplicate QC**
1. MS/MSD %R (75-125%R) and RPD (± 20%) criteria met? - %R >125% J positive results for affected analyte(s) for all samples in the same batch/SDG, accept NDs. - %R <75% J/UJ for affected analyte(s) for all samples in the same batch/SDG – RPD outside ± 20% J positive results for affected analyte(s) for all samples in the same batch/SDG, accept NDs. 2. Was a sample spiked at the frequency of 1/batch or 20 samples? 3, Was the MS performed on a site sample? 4. Was the MS performed on a FB/EB or TB? If yes, J all sample data.		X		1. Some MS %R nonconformances. Refer to MS/MSD Summary Table for nonconformances. 2 .Frequency OK 3. Spiked non-site samples will not be applied 4.NA
Serial Dilution			X	**Not reviewed for limited validation**
1. %D (≤ 10%R) criteria met? – If analyte concentration > 25xIDL (7000) or > 10x IDL (6010) and %D > 10% J positive results for affected analyte(s) for all samples in the same batch/SDG, accept NDs. 2. Was the frequency 1/batch or 20 samples? 3, Was a site sample used? 4. Was a FB/EB or TB used? If yes, J all sample data. **5.** Spot check accuracy of %Ds				
Post Digestion Spike			X	**Not reviewed for limited validation**
1. %R criteria met? (75-125%R). - %R >125% J positive results for affected analyte(s) for all samples in the same batch/SDG, accept NDs. - %R <75% J/UJ affected analyte(s) for all samples in the same batch/SDG. 2. Was the spike performed on a FB/EB or TB? If yes, J all sample data? 3. Was a sample spiked at the frequency of 1/batch or 20 samples?				
Laboratory Control Sample Data Included in Lab Package?	X			
1. LCS %R (80-120%R) criteria met? If no, J/UJ all affected analyte(s) for all samples in the same batch/SDG. data. 2. Was a sample spiked at the frequency of 1/batch or 20 samples? If no, J/UJ affected analyte(s) for all sample in the same batch/SDG.				1. Yes 2. 1/batch
Laboratory Duplicate Data Included in Lab Package?	X			
Aqueous If RPD is >20% but <100% and sample and field duplicate results are >5x the QL, estimate (J) results > the QL. If RPD is >100%, reject (R) results ≥ the QL. If sample and/or duplicate is <5x the QL and absolute difference is > the QL, estimate (J) positive results <5x the QL and nondetects (UJ). If absolute difference is > 2x the QL, reject (R) non detects and positive results <5x the QL. SOIL: If RPD is >35% but <120% and sample and field duplicate results are >5x the QL, estimate (J) results > the QL. If RPD is > 120%, reject (R) results > the QL. If sample and/or duplicate is <5x the QL and absolute difference is >2x the QL, estimate (J) positive results <5x QL and nondetects (UJ). If absolute difference is >4x the QL, reject (R) non detects and positive results <5x QL.				All aqueous and soil laboratory duplicate RPDs met criteria

ITEM	YES	NO	N/A	COMMENTS
Field Duplicate Data Included in Lab Package?		X		
Aqueous If RPD is >20% but <100% and sample and field duplicate results are >5x the QL, estimate (J) results > the QL. If RPD is >100%, reject (R) results ≥ the QL. If sample and/or duplicate is <5x the QL and absolute difference is > the QL, estimate (J) positive results <5x the QL and nondetects (UJ). If absolute difference is > 2x the QL, reject (R) non detects and positive results <5x the QL. SOIL: If RPD is >35% but <120% and sample and field duplicate results are >5x the QL, estimate (J) results > the QL. If RPD is > 120%, reject (R) results > the QL. If sample and/or duplicate is <5x the QL and absolute difference is >2x the QL, estimate (J) positive results <5x QL and nondetects (UJ). If absolute difference is >4x the QL, reject (R) non detects and positive results <5x QL.				None for this SDG

Hold Times

Sample ID	Matrix	Analysis Method	Sample Date	Prep Date	Analysis Date	Sample To Prep	Prep To Analysis	Sample To Analysis	Status
EB041811	WQ	SW6010	4/18/2011 15:15	4/19/2011 11:55	4/19/2011 22:40	1	0	1	OK @180 days
EF-B18-2.5	SO	SW6010	4/18/2011 14:05	4/25/2011 8:52	4/27/2011 13:02	7	2	9	OK @180 days
EF-B20-2.5	SO	SW6010	4/18/2011 11:50	4/25/2011 8:52	4/27/2011 12:58	7	2	9	OK @180 days
EF-B21-2.5	SO	SW6010	4/18/2011 9:20	4/25/2011 8:52	4/27/2011 12:54	7	2	9	OK @180 days
EF-B24-11.5	SO	SW6010	4/18/2011 14:40	4/25/2011 8:52	4/27/2011 18:57	7	2	9	OK @180 days
EF-B24-17.5	SO	SW6010	4/18/2011 14:55	4/25/2011 8:52	4/26/2011 12:50	7	1	8	OK @180 days
EF-B24-22.5	SO	SW6010	4/18/2011 15:00	4/25/2011 8:52	4/27/2011 19:01	7	2	9	OK @180 days
EF-B24-6.5	SO	SW6010	4/18/2011 14:25	4/25/2011 8:52	4/27/2011 18:46	7	2	9	OK @180 days
EF-B25-11.5	SO	SW6010	4/18/2011 13:55	4/25/2011 8:52	4/27/2011 18:34	7	2	9	OK @180 days
EF-B25-17.5	SO	SW6010	4/18/2011 14:10	4/25/2011 8:52	4/27/2011 18:38	7	2	9	OK @180 days
EF-B25-21.5	SO	SW6010	4/18/2011 14:12	4/25/2011 8:52	4/27/2011 18:42	7	2	9	OK @180 days
EF-B25-6.5	SO	SW6010	4/18/2011 13:45	4/25/2011 8:52	4/27/2011 18:31	7	2	9	OK @180 days
EF-B26-12.5	SO	SW6010	4/18/2011 12:10	4/25/2011 8:52	4/27/2011 13:09	7	2	9	OK @180 days
EF-B26-12.5	SO	SW6010	4/18/2011 12:10	4/25/2011 8:52	4/27/2011 18:27	7	2	9	OK @180 days
EF-B26-17.5	SO	SW6010	4/18/2011 12:30	4/25/2011 8:52	4/27/2011 13:13	7	2	9	OK @180 days
EF-B26-22.5	SO	SW6010	4/18/2011 12:40	4/25/2011 8:52	4/27/2011 12:17	7	2	9	OK @180 days
EF-B26-7.0	SO	SW6010	4/18/2011 11:55	4/25/2011 8:52	4/27/2011 13:05	7	2	9	OK @180 days
EF-B26-7.0	SO	SW6010	4/18/2011 11:55	4/25/2011 8:52	4/27/2011 18:23	7	2	9	OK @180 days

REPORTING LIMITS AND DILUTIONS

Sample ID	Method	Analyte	Result	Detect Flag	Units	NJDEP Impact to GW Soil Screening level (mg/kg)	Flag
EF-B24-17.5	SW6010	ANTIMONY	6.1	N	mg/kg	4	RL exceeds
EF-B24-17.5	SW6010	THALLIUM	6.1	N	mg/kg	3	RL exceeds
EF-B24-22.5	SW6010	ANTIMONY	4.2	N	mg/kg	4	RL exceeds
EF-B24-22.5	SW6010	THALLIUM	4.2	N	mg/kg	3	RL exceeds
EF-B25-17.5	SW6010	THALLIUM	3.6	N	mg/kg	3	RL exceeds
EF-B25-21.5	SW6010	ANTIMONY	4.8	N	mg/kg	4	RL exceeds
EF-B25-21.5	SW6010	THALLIUM	4.8	N	mg/kg	3	RL exceeds
EF-B26-12.5	SW6010	THALLIUM	14.4	N	mg/kg	3	RL exceeds
EF-B26-17.5	SW6010	ANTIMONY	7.3	N	mg/kg	4	RL exceeds
EF-B26-17.5	SW6010	THALLIUM	7.3	N	mg/kg	3	RL exceeds
EF-B26-22.5	SW6010	ANTIMONY	7.3	N	mg/kg	4	RL exceeds
EF-B26-22.5	SW6010	THALLIUM	7.3	N	mg/kg	3	RL exceeds

MS/MSD Summary (SPIKED SAMPLE EF-B24-17.5)

METAL	SPIKED SAMPLE RESULT (MG/KG)	SAMPLE RESULT (MG/KG)	SPIKE ADDED (MG/KG)	%R	ACTIONS
Chromium	98.89	28.4	60.7	116	OK
Nickel	173.5	20.1J	152	101	OK
Antimony	76.54	6.1U	152	50	**J/UJ all antimony results in this SDG**
Thallium	619.0	6.1U	607	102	OK
Vanadium	199.2	42.9	152	103	OK

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Memorandum

Date: June 25, 2007

To: Robert Falotico/Westford

From: Deb Truini/Westford

Subject: Data Validation
PPG Site 137/135/133
December 2006 Soil Sampling
Severn Trent Laboratories
Submission #B076

Distribution: D. Simmons/Westford 05510-109-0447

PP174Cr6dat.doc

A full data validation was performed by Deb Truini of ENSR on the following soil and field blank samples collected on December 19, 2006 for hexavalent chromium analysis at the PPG Site 137/135/133 – Jersey City, NJ.

Samples	
PPG-135-B4D (8.5-9.0)	PPG-135-B12E (8.5-9.0)
PPG-135-B4E (12.5-13.0)	PPG-135-B12F (12.0-13.0) (Matrix spike/Laboratory duplicate)
PPG-135-B4F (13.9-14.4)	PPG-135-B12G (16.0-16.5)
PPG-135-B4FD (13.9-14.4) [Field duplicate of PPG-135-B4F (13.9-14.4)]	PPG-135-B12H (18.7-19.2)
PPG-135-B4G (18.0-18.5)	F121906 (Field blank)
PPG-135-B4H (22.3-22.8)	

The samples were submitted to Severn Trent Laboratories (STL) in Edison, New Jersey, for analysis on December 19, 2006. STL processed and reported these samples under submission #B076. The samples were analyzed for hexavalent chromium (Cr+6) according to SW-846 Methods 3060A and 7196A. The sample results were assessed according to the New Jersey Department of Environmental Protection Standard Operating Procedures (SOPs) Revision No. 2, SOP No. 5.A.10, August 2005, "*Standard Operating Procedure (SOP) for Analytical Data Validation of Hexavalent Chromium*."

General Comments

Issues noted during validation are discussed below. No data results were rejected. Minor qualification of the data was required.

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Data Completeness

All soil sample IDs were truncated and the "PPG-135-" prefix listed on the chain-of-custody (COC) was dropped by STL on all the laboratory summary forms due to software limitations. This prefix was retained during validation in this validation memorandum as well as the supporting worksheets. In addition, this prefix was retained in the project database for consistency with the COC.

Matrix Spike Results

Samples 137-B1F (13.2-14.2), 133-B1E (5.4-6.4), and PPG-135-B12F (12.0-13.0) were selected for matrix spike (MS) analysis for hexavalent chromium analysis in association with this data set. Sample 137-B1F (13.2-14.2) was reported in STL #A575 and sample 133-B1E (5.4-6.4) was reported in STL #A623.

The initial recoveries for the soluble and/or insoluble matrix spikes in all three samples were outside the control limits of 75-125%. However, the initial spike concentration for the soluble and insoluble matrix spikes could not be evaluated for samples 137-B1F (13.2-14.2) and 133-B1E (5.4-6.5) could not be evaluated since the spikes added [63.6 mg/Kg and 1126 mg/Kg for sample 137-B1F (13.2-14.2) and 64.6 mg/Kg and 1144 mg/Kg for sample 133-B1E (5.4-6.4), respectively] were less than 4x the native concentration [13200 mg/Kg for sample 137-B1F (13.2-14.2) and 6520 mg/Kg for sample 133-B1E (5.4-6.5)]. The laboratory chose to re-digest and re-analyze the soil samples and all required quality control samples associated with these preparation batches #4204 [soil sample PPG-135-B4H (22.3-22.8)] and #4205 [soil sample PPG-135-B12H (18.7-19.2)]. The original analysis results were reported for both preparation batches. No validation actions were taken on this basis of MS recoveries.

The soluble MS recovery criteria for sample PPG-135-B12F (12.0-13.0) was not met in the original analysis; therefore, the laboratory re-digested/re-analyzed all associated soil samples and QC samples in preparation batch #4231. A summary of sample results and associated quality control data for both sets of analyses is provided in the table below for sample PPG-135-B12F (12.0-13.0).

Parameter	Initial Analysis (Extracted 1/16/07)	Re-Analysis (Extracted 1/17/07)
Hexavalent Chromium PPG-135-B12F (12.0-13.0)	5.04 U mg/Kg	5.04 U mg/Kg
Hexavalent Chromium PPG-135-B12F (12.0-13.0) DUP	5.04 U mg/Kg	5.04 U mg/Kg
Hexavalent Chromium Laboratory Blank	< 2 mg/Kg	< 2 mg/Kg
Hexavalent Chromium Soluble Matrix Spike	6.4% Recovery	0% Recovery
Hexavalent Chromium Insoluble Matrix Spike	83.6% Recovery	24.1% Recovery
Hexavalent Chromium Post-Verification Spike	29.5% Recovery	0% Recovery
Hexavalent Chromium LCS Soluble	97% Recovery	97% Recovery
Hexavalent Chromium LCS Insoluble	96.7% Recovery	112.4% Recovery
Associated samples: all soil samples		

The soluble matrix spike %R listed in the table above did not meet QC acceptance criteria in the initial digestion and analysis Since there was no improvement in the MS and post digestion spike (PDS) recoveries, the original analysis results for soil samples digested in preparation batch #4231 [all soil samples, with the exception of samples PPG-135-B4H (22.3-22.8) and PPG-135-B12H (18.7-19.2)] were reported.

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Qualifications based on the MS recoveries apply to all samples of the same matrix in this data set. Therefore, the nondetect hexavalent chromium results in all soil samples in this data set were qualified as estimated (UJ) since the soluble MS recovery for sample PPG-135-B12F (12.0-13.0) was <50 %R, and the MS sample matrix was determined to be of a reducing nature (see the supporting worksheets for Eh and pH results for all soil samples). These results are usable as estimated quantitation limits that may be biased low.

Post Digestion Spike (PDS) Results

Samples 137-B1F (13.2-14.2), 133-B1E (5.4-6.4), and PPG-135-B12F (12.0-13.0) were selected for post digestion spike (PDS) analysis for hexavalent chromium analysis in association with this data set. Sample 137-B1F (13.2-14.2) was reported in STL #A575 and sample 133-B1E (5.4-6.4) was reported in STL #A623.

The following PDS percent recoveries listed in the table below did not meet the QC acceptance criteria for sample 137-B1F (13.2-14.2) in the original digestion and analysis.

Analyte	**PDS %R**
Hexavalent chromium (initial analysis)	116
Hexavalent chromium (re-analysis)	126
QC Limits (%)	**85-115**
Associated samples: all soil samples, with the exception of sample PPG-135-B12F (12.0-13.0)	

Qualifications based on the PDS percent recoveries apply to all samples of the same matrix in this data set. No validation actions were required since hexavalent chromium was nondetect in all soil samples.

The following PDS percent recoveries listed in the table below did not meet the QC acceptance criteria in the initial digestion and analysis of sample 133-B1E (5.4-6.4). Note that even though the PDS met recovery criteria in the re-digestion and re-analysis, hexavalent chromium results were not reported from the re-digestion/re-analysis due to high insoluble LCS recovery

Analyte	**PDS %R**
Hexavalent chromium (initial analysis)	118
Hexavalent chromium (re-analysis)	Ok
QC Limits (%)	**85-115**
Associated samples: all soil samples, with the exception of sample PPG-135-B12F (12.0-13.0)	

Qualifications based on the PDS percent recoveries apply to all samples of the same matrix in this data set. No validation actions were required since hexavalent chromium was nondetect in all soil samples.

The following PDS percent recoveries listed in the table below did not meet the QC acceptance criteria in the original digestion/analysis of sample PPG-135-B12F (12.0-13.0) in the original digestion and analysis.

Analyte	**PDS %R**
Hexavalent chromium (initial analysis)	29.5
Hexavalent chromium (re-analysis)	19
QC Limits (%)	**85-115**
Associated samples: all soil samples	

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Qualifications based on the PDS recoveries apply to all samples of the same matrix in this data set. Therefore, the nondetect hexavalent chromium results for all soil samples were qualified as estimated (UJ). These results are usable as estimated quantitation limits.

Note that no validation actions were required due to the failed hexavalent chromium PDS recovery associated with the re-digestion/re-analysis of samples 137-B1F (13.2-14.2) and PPG-135-B12F (12.0-13.0) since the hexavalent chromium results were reported from the original digestion and analysis.

One aqueous non-PPG sample was selected for the PDS analysis in association with field blank sample F121907. No validation actions were applied for PDS exceedances in the non-PPG sample due to potential differences in the sample matrix.

Field Duplicate Results

The following table indicates the field duplicate samples and the associated STL submission number.

Sample IDs	STL Submission Number
PPG-135-B4F (13.9-14.4) and PPG-135-B4FD (13.9-14.4)	B076

No validation actions were required since original and field duplicate sample results (in both the original digestion/analysis and re-digestion/re-analysis) were nondetect for hexavalent chromium and precision was acceptable.

Laboratory Control Sample Results

No validation actions were required due to the failed hexavalent chromium insoluble LCS recovery (130%) associated with the re-digestion and re-analysis of preparation batch 4205A [PPG-135-B12H (18.7-19.2)] since the hexavalent chromium results associated with this analysis were reported from the original digestion and analysis.

Sample Quantitation Limits

It should be noted that the reporting limits for the nondetect hexavalent chromium results were not adjusted for the initial digestion weight due to laboratory software limitations. No validation actions were taken other than to note this discrepancy.

Data Quality and Recommendations

In general, these data appear to be valid and may be used for decision-making purposes. The hexavalent chromium results were accepted with minor qualifications for low MS and PDS recoveries (with evidence of reducing matrix) in all soil samples.

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Memorandum

Date: May 14, 2007

To: Robert Falotico/Westford

From: Deb Truini/Westford

Subject: Data Validation
PPG Site 137/135/133
Jersey City, New Jersey
December 2006 Soil Sampling
Severn Trent Laboratories
Submission #B076

Distribution: D. Simmons/Westford

05510-109-0447

PP174inorgdat.doc

A limited data validation was performed by Deb Truini of ENSR on the following soil and field blank samples collected on December 19, 2006 for Target Analyte List (TAL) metals analysis at the PPG Site 137/135/133 – Jersey City, NJ.

Samples	
PPG-135-B4D (8.5-9.0)	PPG-135-B12E (8.5-9.0)
PPG-135-B4E (12.5-13.0)	PPG-135-B12F (12.0-12.5) (Matrix spike/Laboratory duplicate)
PPG-135-B4F (13.9-14.4)	PPG-135-B12G (16.0-16.5)
PPG-135-B4FD (13.9-14.4) [Field duplicate of PPG-135-B4F (13.9-14.4)]	PPG-135-B12H (18.7-19.2)
PPG-135-B4G (18.0-18.5)	F121906 (Field blank)
PPG-135-B4H (22.3-22.8)	

The samples were submitted to Severn Trent Laboratories (STL) in Edison, New Jersey, for analysis on December 19, 2006. STL processed and reported these samples under submission #B076. Metals analyses were performed using SW-846 Methods 6010B and 7471A. The sample results were assessed according to the New Jersey Department of Environmental Protection Standard Operating Procedures (SOPs) Revision No. 1, SOP No. 5.A.16, May, 2002. "*Quality Assurance Data Validation of Analytical Deliverables for Inorganics (based on USEPA SW-846 Methods)*." This SOP was modified to accommodate SW-846 methods and to address situations not described in the SOP. The review was based on summary information provided on holding times, blanks, matrix spikes, laboratory duplicates, field duplicates, and laboratory control samples (LCS).

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General Comments

Issues noted during validation are discussed below. No data results were rejected. Minor qualification of the data was required.

Data Completeness

All soil sample IDs were truncated and the "PPG-135-" prefix listed on the chain-of-custody (COC) was dropped by STL on all the laboratory summary forms due to software limitations. This prefix was retained during validation in this validation memorandum as well as the supporting worksheets. In addition, this prefix was retained in the project database for consistency with the COC.

Soil field blank sample F121906 was digested according to soil methods 3050B and 7471A for all metals. No validation actions were required on this basis other than this notation.

The laboratory did not summarize the interference check solution (ICS A) results for the unspiked target analytes on a form equivalent to Form 4 due to laboratory software limitations. Nor did they provide the interelement correction factors on a form equivalent to Form 11. No validation actions were required on this basis other than this notation.

Holding Times and Sample Preservation

Documentation regarding aqueous sample pH verification upon receipt at the laboratory was not included in the data package on a sample-by-sample basis. Instead the pHs were verified during sample login and this check was documented in the laboratory Nonconformance Summary in a general statement. The form noted that "sample delivery conforms with requirements." No validation action was taken except for this notation.

Blank Results

The following table indicates the field blank sample and the associated STL submission number.

Sample IDs	STL Submission Number
F121906	B076

Blank contaminants were detected in the laboratory instrument blanks associated with the soil samples in this data package. The maximum blank contamination is listed in the table below. Note that the maximum blank concentrations for all analytes, with the exception of mercury, were multiplied by a factor of two since all samples were analyzed at 2x dilutions for these analytes.

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Analyte	Maximum Concentration (µg/L)	3x Action Level (mg/Kg)	10x Action Level (mg/Kg)
Beryllium	-0.20	-0.06	-0.20
Associated samples: all soils			
Mercury	-0.10	-0.05	-0.17
Associated samples: PPG-135-B4E (12.5-13.0), PPG-135-B4F (13.9-14.4)			
Potassium	-948.8	-284.6	-948.8
Associated samples: PPG-135-B4D (8.5-9.0), PPG-135-B4E (12.5-13.0), PPG-135-B4F (13.9-14.4), PPG-135-B4FD (13.9-14.4), PPG-135-B4G (18.0-18.5), PPG-135-B12E (8.5-9.0), PPG-135-B12G (16.0-16.5), PPG-135-B12H (18.7-19.2)			

The positive and nondetect results for beryllium in sample PPG-135-B12F (12.0-13.0); for mercury in sample PPG-135-B4F (13.9-14.4); and for potassium in samples PPG-135-B4D (8.5-9.0), PPG-135-B4E (12.5-13.0), PPG-135-B12E (8.5-9.0), and PPG-135-B12H (18.7-19.2) were qualified as estimated (J and UJ, respectively) due to negative instrument drift. These beryllium, mercury, and potassium results are usable as estimated values and quantitation limits that may be biased low.

Blank contaminants were detected in the laboratory instrument blanks associated with the field blank sample in this data package. The maximum blank contamination is listed in the table below.

Analyte	Maximum Concentration (µg/L)	3x Action Level (µg/L)	10x Action Level (µg/L)
Beryllium	-0.10	-0.30	-1.0
Potassium	-474.4	-1423.2	-4744
Associated sample: F121906			

The nondetect results for beryllium and potassium in sample F121906 were qualified as estimated (UJ) due to negative instrument drift. These beryllium and potassium results are usable as estimated quantitation limits that may be biased low.

Blank contaminants were detected in the laboratory method blanks associated with the soil samples in this data package. The maximum blank contamination is listed in the table below. Note that the maximum blank concentrations for all analytes, with the exception of mercury, were multiplied by a factor of two since all samples were analyzed at 2x dilutions for these analytes.

Analyte	Maximum Concentration (mg/Kg)	3x Action Level (mg/Kg)	10x Action Level (mg/Kg)
Potassium	-88.192	-264.576	-881.92
Associated samples: PPG-135-B4H (22.3-22.8), PPG-135-B12F (12.0-13.0)			

The positive result for potassium in sample PPG-135-B12F (12.0-13.0) was qualified as estimated (J) due to negative instrument drift. This potassium result is usable as an estimated value that may be biased low.

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Blank contaminants were detected in the field blank sample F121906 (after laboratory blank actions were applied) which was associated with the soil samples in this data package. The field blank contamination is listed in the table below.

Analyte	Maximum Concentration (µg/L)	3x Action Level (mg/Kg)	10x Action Level (mg/Kg)
Aluminum	120	36.0	120
Associated samples: all soils			

No validation actions were required for aluminum since the concentrations of this analyte were >10x the action level in the associated soil samples.

Matrix Spike Results

Sample PPG-135-B12F (12.0-13.0) was selected for matrix spike (MS) analysis for all metals analysis in association with this data set. The following MS percent recoveries (%Rs) listed in the table below did not meet the QC acceptance criteria for sample PPG-135-B12F (12.0-13.0).

Analyte	MS %R
Antimony	51.9
Manganese	57.8
QC Limits (%)	**75-125**
Associated samples: all soils	

The positive and nondetect results for antimony and manganese in all soil samples were qualified as estimated (J and UJ, respectively) due to <75% MS recoveries. These antimony and manganese results are usable for project decisions as estimated values and quantitation limits that may be biased low.

Laboratory Duplicate Results

Laboratory duplicate analyses were performed on soil sample PPG-135-B12F (12.0-13.0) for all metals in association with the soil samples in this data set. The following table summarizes the analytes that exceeded the relative percent difference (RPD) criteria in laboratory duplicate sample PPG-135-B12F (12.0-13.0).

Analyte	RPD (%)
Calcium	70.1
Iron	43.4
Manganese	59.7
Associated samples: all soils	

Criteria: RPD < 20% (only applicable if both results are >5x sample quantitation limit (SQL))
± SQL if sample and duplicate are <5x SQL

The positive calcium, iron, and manganese results in all soil samples were qualified as estimated (J). These results are usable for project decisions as estimated values.

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Field Duplicate Results

The following table indicates the field duplicate samples and the associated STL submission number.

Sample IDs	STL Submission Number
PPG-135-B4F (13.9-14.4) and PPG-135-B4FD (13.9-14.4)	B076

The following table summarizes the detected analytes and the RPD criteria in field duplicate pair PPG-135-B4F (13.9-14.4) and PPG-135-B4FD (13.9-14.4). The RPDs for arsenic and mercury were not calculable (NC) since these results were nondetect in the original sample. Precision for arsenic and mercury was acceptable since the field duplicate results were <10x the sample quantitation limit (SQL).

Analyte	PPG-135-B4F (13.9-14.4) (mg/Kg)	PPG-135-B4FD (13.9-14.4) (mg/Kg)	RPD (%)
Aluminum	15800	18100	13.6
Arsenic	2.8 U	6.5	NC
Barium	50.6	48.1	5.1
Beryllium	0.78	0.94	18.6
Calcium	2630	2900	9.8
Chromium	25.3	31.8	22.8
Cobalt	8.7	11.0	23.4
Copper	16.9	19.8	15.8
Iron	25000	35100	33.6
Lead	26.2	20.5	24.4
Magnesium	6950	8470	19.7
Manganese	427	555	26.1
Mercury	0.048 U	0.060	NC
Nickel	23.5	30.8	26.9
Potassium	3370	4380	26.1
Sodium	9650	10600	9.4
Vanadium	35.2	41.9	17.4
Zinc	68.3	99.4	37.1

Criteria: RPD < 50% [only applicable if both results are >10x sample quantitation limit (SQL)]
±8x SQL if sample and duplicate are <10x SQL

No validation actions were required for any of the metals since field duplicate RPD criteria was met and precision was deemed acceptable.

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Sample Quantitation Limits

It should be noted that the reporting limits for the nondetect metal results were not adjusted for the initial digestion weight due to laboratory software limitations. No validation actions were taken other than to note this discrepancy.

All metals results were reported to the instrument detection limit (IDL). However in some instances, results were reported as nondetect event though a negative value exceeded the absolute value of the IDL. The laboratory policy for reporting negative values is that for analytes with SQLs <1.0 mg/Kg (i.e., 10 µg/L at the instrument), negative values are allowable at values 2x the SQL. The validator reviewed antimony, arsenic, beryllium, lead, selenium, and thallium for this negative interference. There was no evidence of potential negative matrix interference for these analytes in any of the soil or aqueous samples in this data set.

The following table indicates the positive and nondetect results that were analyzed at dilutions due to either high concentrations (exceedance of the instrument linear range) of these analytes present in the undiluted analysis resulting in potential detector saturation or high concentrations of an interfering analyte present in the undiluted analysis, which affects the accuracy of the spectral interference correction attributable to the interference.

Sample ID	Analyte	Dilution Factor
PPG-135-B4D (8.5-9.0)	All analytes, with the exception of mercury (which was analyzed at a 1x dilution)	2
PPG-135-B4E (12.5-13.0)	All analytes, with the exception of mercury (which was analyzed at a 30x dilution)	2
	Mercury	30
PPG-135-B4F (13.9-14.4)	All analytes, with the exception of mercury and thallium (which were analyzed at 1x dilutions)	2
PPG-135-B4FD (13.9-14.4)	All analytes, with the exception of mercury and thallium (which were analyzed at 1x dilutions)	2
PPG-135-B4G (18.0-18.5)	All analytes, with the exception of mercury (which was analyzed at a 5x dilution)	2
PPG-135-B4H (22.3-22.8)	All analytes, with the exception of mercury (which was analyzed at a 1x dilution)	2
PPG-135-B12E (8.5-9.0)	All analytes, with the exception of mercury (which was analyzed at a 1x dilution)	2
PPG-135-B12F (12.0-12.5)	All analytes, with the exception of mercury and thallium (which were analyzed at 1x dilutions)	2
PPG-135-B12G (16.0-16.5)	All analytes, with the exception of mercury (which was analyzed at a 1x dilution)	2
PPG-135-B12H (18.7-19.2)	All analytes, with the exception of mercury (which was analyzed at a 1x dilution)	2

No data validation actions were taken other than this notation.

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Data Quality and Recommendations

In general, these data appear to be valid and may be used for decision-making purposes. All metals results were accepted with minor qualifications for beryllium, mercury, potassium in several soil and aqueous samples due to negative instrument drift; for antimony and manganese in all soil samples due to low MS recoveries; and for calcium, iron, and manganese in all soil samples due the laboratory duplicate RPD exceedances.

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Memorandum

Date: May 18, 2007

To: Robert Falotico/Westford

From: Paula DiMattei/Westford

Subject: Data Validation
PPG Site 137/135/133
December 2006 Soil Sampling
Severn Trent Laboratories
Submission #B141

Distribution: D. Simmons/Westford 05510-109-0447

PP187Cr6pld

A full data validation was performed by Paula DiMattei of ENSR on the following soil and field blank samples collected on December 20, 2006 for hexavalent chromium analysis at the PPG Site 137/135/133 – Jersey City, NJ.

Samples	
PPG-135-B13E(8.5-9.5)	PPG-135-B14F(12.8-13.3)
PPG-135-B13ED(8.5-9.5) [Field duplicate of PPG-135-B13E(8.5-9.5)]	PPG-135-B14G(17.0-17.5)
PPG-135-B13F(13.5-14.0)	PPG-135-B13I(24.0-24.5)
PPG-135-B13G(17.6-18.1)	PPG-135-B14H(20.4-20.9)
PPG-135-B13H(21.5-22.5) (Matrix spike/Laboratory duplicate)	F122006 (Field blank)
PPG-135-B14E(8.5-9.0)	

The samples were submitted to Severn Trent Laboratories (STL) in Edison, New Jersey, for analysis on December 20, 2006. STL processed and reported these samples under submission #B141. The samples were analyzed for hexavalent chromium (Cr+6) according to SW-846 Methods 3060A and 7196A. The sample results were assessed according to the New Jersey Department of Environmental Protection Standard Operating Procedures (SOPs) Revision No. 2, SOP No. 5.A.10, August 2005, "*Standard Operating Procedure (SOP) for Analytical Data Validation of Hexavalent Chromium*."

General Comments

Issues noted during validation are discussed below. No data results were rejected. Minor qualification of the data was required. Only those issues which impact data usability are addressed in this memo.

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Data Completeness

All soil sample IDs were truncated and the "135-"prefix listed on the chain-of-custody (COC) was dropped by STL on all the laboratory summary forms due to software limitations. These prefixes were retained during validation in this validation memorandum as well as the supporting worksheets. In addition, these prefixes were retained in the project database for consistency with the COC.

The adjusted pH results were not recorded due to a laboratory oversight for the original preparation batch for all soil samples except samples PPG-135-B13I(24.0-24.5) and PPG-135-B14H(20.4-20.9). Consequently, the re-digestion/re-analysis results for the adjusted pH values that were recorded were reported for these samples.

Matrix Spike Results

Samples PPG-135-B13H(21.5-22.5) and 133-B1E(5.4-6.4), analyzed in SDG A623 were selected for matrix spike (MS) analysis for hexavalent chromium analysis in association with this data set.

The MS analysis of sample 133-B1E(5.4-6.4) did not meet the criteria in the original analysis; therefore, the laboratory re-digested/re-analyzed all the associated soil samples and QC samples in preparation batch #4205. A summary of sample results and associated quality control data for both sets of analyses is provided in the table below for sample 133-B1E(5.4-6.4).

Parameter	Initial Analysis (Extracted 1/3/07)	Re-Analysis (Extracted 2/1/07)
Hexavalent Chromium 133-B1E(5.4-6.4)	6520 mg/Kg	8390 mg/Kg
Hexavalent Chromium 133-B1E(5.4-6.4) DUP	5680 mg/Kg	10100 mg/Kg
Hexavalent Chromium Laboratory Blank	< 2 mg/Kg	< 2 mg/Kg
Hexavalent Chromium Soluble Matrix Spike	356% Recovery	3731% Recovery
Hexavalent Chromium Insoluble Matrix Spike	135% Recovery	1295% Recovery
Hexavalent Chromium Post-Verification Spike	118% Recovery	92.7% Recovery
Hexavalent Chromium LCS Soluble	99% Recovery	97% Recovery
Hexavalent Chromium LCS Insoluble	117% Recovery	130% Recovery
Associated samples: all soil samples		

The initial spike concentration for the soluble and insoluble matrix spikes could not be evaluated since the spikes added (64.6 mg/Kg and 1144 mg/Kg, respectively) were less than 4x the native concentration (6520 mg/Kg). The laboratory chose to re-digest/re-analyze the associated soil samples and all required quality control samples associated with these MS samples. Insoluble and soluble laboratory control sample (LCS) results associated with both the original analysis/re-analysis were within established control limits except as noted below. No validation actions were required for MS %R exceedances since the spikes could not be evaluated.

Note that the original digestion/analysis hexavalent chromium results were reported for all soil samples in preparation batch #4205 [PPG-133-B13I(24.0-25.5 and PPG-133-B14H(20.4-20.9)]. The post verification spike %R listed in the table above did not meet QC acceptance criteria in the original analysis. However, all associated sample results were not detected; therefore, data validation actions would not be required on this basis. The insoluble LCS %R listed in the table above did not meet QC acceptance criteria in the re-digestion/re-analysis, but met criteria for the original digestion/analysis.

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The MS analysis of sample PPG-135-B13H(21.5-22.5) did not meet the criteria in the original analysis; therefore, the laboratory re-digested/re-analyzed all the associated soil samples and QC samples in preparation batch #4232. A summary of sample results and associated quality control data for both sets of analyses is provided below for sample PPG-135-B13H(21.5-22.5).

Parameter	Initial Analysis (Extracted 1/16/07)	Re-Analysis (Extracted 1/17/07)
Hexavalent Chromium PPG-135-B13H(21.5-22.5)	2.99 U mg/Kg	2.99 U mg/Kg
Hexavalent Chromium PPG-135-B13H(21.5-22.5) DUP	2.99 U mg/Kg	2.99 U mg/Kg
Hexavalent Chromium Laboratory Blank	< 2 mg/Kg	< 2 mg/Kg
Hexavalent Chromium Soluble Matrix Spike	0% Recovery	0% Recovery
Hexavalent Chromium Insoluble Matrix Spike	33.4% Recovery	25.6% Recovery
Hexavalent Chromium Post-Verification Spike	10.7% Recovery	0% Recovery
Hexavalent Chromium LCS Soluble	92% Recovery	97% Recovery
Hexavalent Chromium LCS Insoluble	102% Recovery	110% Recovery
Associated samples: all soil samples		

The soluble and insoluble matrix spike %Rs listed in the table above did not meet QC acceptance criteria of 75-125% in the initial digestion/analysis or in the re-digestion/re-analysis. The re-digestion/re-analysis results for preparation batch #4232 [all soil samples except PPG-135-B13I(24.0-24.5) and PPG-135-B14H(20.4-20.9)] were reported. As previously discussed, the adjusted pH values for the original preparation batch of these samples were not recorded due to a laboratory oversight.

Qualifications based on the MS recoveries apply to all samples of the same matrix in this SDG. Therefore, the nondetect hexavalent chromium results in all soil samples were qualified as estimated (UJ) since the soluble and insoluble MS recoveries were <50%R, and the MS sample matrix was determined to be of a reducing nature (see table below). These results are usable as estimated quantitation limits that may be biased low.

Sample ID	Eh (mV)	pH (su)
PPG-135-B13I(24.0-24.5)	335	8.3
PPG-135-B14H(20.4-20.9)	366	7.4
PPG-135-B13E(8.5-9.5)	303	7.76
PPG-135-B13ED(8.5-9.5)	206	7.04
PPG-135-B13F(13.5-14.0)	335	7.29
PPG-135-B13G(17.6-18.1)	391	5.94
PPG-135-B13H(21.5-22.5)	484	4.3
PPG-135-B14E(8.5-9.0)	294	6.82
PPG-135-B14F(12.8-13.3)	344	6.89
PPG-133-B14G(17.0-17.5)	382	6.06

Post Digestion Spike (PDS) Results

Samples 133-B1E(5.4-6.4) and PPG-135-B13H(21.5-22.5) were selected for post digestion spike (PDS) analysis for hexavalent chromium analysis in association with this data set. Sample 133-B1E(5.4-6.4) was reported in STL submission number A623.

All soil samples were re-digested/re-analyzed for hexavalent chromium since MS recovery criteria of 75-125 %R was not met in the original digestion/analyses.

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The following PDS percent recoveries listed in the table below did not meet the QC acceptance criteria in sample 133-B1E(5.4-6.4).

Analyte	PDS %R
Hexavalent chromium (initial analysis)	118
QC Limits (%)	**85-115**
Associated samples: all soil samples	

The following PDS percent recoveries listed in the table below did not meet the QC acceptance criteria in sample PPG-135-B13H(21.5-22.5).

Analyte	PDS %R
Hexavalent chromium (initial analysis)	10.7
Hexavalent chromium (re-analysis)	0
QC Limits (%)	**85-115**
Associated samples: all soil samples	

Qualifications based on the PDS recoveries apply to all samples of the same matrix in this SDG. Therefore, the positive and nondetect hexavalent chromium results in all soil samples were qualified as estimated (J and UJ, respectively). These results are usable as estimated values or quantitation limits. The bias is indeterminate due to the conflicting bias of the high and low PDS recoveries.

Field Duplicate Results

The following table indicates the field duplicate samples and the associated STL submission number.

Sample IDs	STL Submission Number
PPG-135-B13E(8.5-9.5) and PPG-135-B13ED(8.5-9.5)	B141

Hexavalent chromium was not detected in sample PPG-135-B13E(8.5-9.5) or PPG-135-B13ED(8.5-9.5). Precision was considered acceptable.

Sample Quantitation Limits

It should be noted that the reporting limits for the nondetect hexavalent chromium results were not adjusted for the initial digestion weight due to laboratory software limitations. No validation actions were taken other than to note this discrepancy.

Dilutions were not performed on any soil samples in this data set; sample quantitation limits were therefore not affected.

Data Quality and Recommendations

In general, these data appear to be valid and may be used for decision-making purposes. The hexavalent chromium results were accepted with minor qualifications for low MS recoveries (with evidence of reducing matrix), and for low and high PDS recoveries.

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Memorandum

Date: May 1, 2007

To: Robert Falotico/Westford

From: Paula DiMattei/Westford

Subject: Data Validation
PPG Site 135
Jersey City, New Jersey
December 2006 Soil Sampling
Severn Trent Laboratories
Submission #B141

Distribution: D. Simmons/Westford 05510-109-0447

PP187inorgpld

A limited data validation was performed by Paula DiMattei of ENSR on the following soil and field blank samples collected on December 20, 2006 for Target Analyte List (TAL) metals analysis at the PPG Site 135 – Jersey City, NJ.

Samples	
PPG-135-B13E(8.5-9.5)	PPG-135-B14E(8.5-9.0)
PPG-135-B13ED(8.5-9.5) [Field duplicate of PPG-135-B13E(8.5-9.5)]	PPG-135-B14F(12.8-13.3)
PPG-135-B13F(13.5-14.0)	PPG-135-B14G(17.0-17.5)
PPG-135-B13G(17.6-18.1)	PPG-135-B14H(20.4-20.9)
PPG-135-B13H(21.5-22.5) (Matrix spike/Laboratory duplicate)	F122006 (Field blank)
PPG-135-B13I(24.0-24.5)	

The samples were submitted to Severn Trent Laboratories (STL) in Edison, New Jersey, for analysis on December 20, 2006. STL processed and reported these samples under submission #B141. Metals analyses were performed using SW-846 Methods 6010B and 7471A. The sample results were assessed according to the New Jersey Department of Environmental Protection Standard Operating Procedures (SOPs) Revision No. 1, SOP No. 5.A.16, May, 2002. "*Quality Assurance Data Validation of Analytical Deliverables for Inorganics (based on USEPA SW-846 Methods)*." This SOP was modified to accommodate SW-846 methods and to address situations not described in the SOP. The review was based on summary information provided on holding times, blanks, matrix spikes, laboratory duplicates, field duplicates, and laboratory control samples (LCS).

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General Comments

Issues noted during validation are discussed below. No data results were rejected. Minor qualification of the data was required.

Data Completeness

All soil sample IDs were truncated and the "PPG-135-" prefix listed on the chain-of-custody (COC) was dropped by STL on all the laboratory summary forms due to software limitations. These prefixes were retained during validation in this validation memorandum as well as the supporting worksheets. In addition, these prefixes were retained in the project database for consistency with the COC.

Soil field blank sample F122006 was digested according to soil methods 3050B and 7471A for all metals. No validation actions were required on this basis other than this notation.

The laboratory did not summarize the interference check solution (ICS A) results for the unspiked target analytes on a form equivalent to Form 4 due to laboratory software limitations. Nor did they provide the interelement correction factors on a form equivalent to Form 11. No validation actions were required on this basis other than this notation.

Holding Times and Sample Preservation

Documentation regarding aqueous sample pH verification upon receipt at the laboratory was not included in the data package on a sample-by-sample basis. Instead the pHs were verified during sample login and this check was documented in the laboratory Nonconformance Summary in a general statement. The form noted that "sample delivery conforms within requirements." No validation action was taken except for this notation.

Blank Results

The following table indicates the field blank sample and the associated STL submission number.

Sample IDs	STL Submission Number
F122006	B141

Blank contaminants were detected in the laboratory instrument blanks associated with the soil samples in this data package. The maximum blank contamination is listed in the table below. Note that the maximum blank concentrations for all analytes, with the exception of thallium, were multiplied by a factor of two since all samples were analyzed at 2x dilutions for these analytes.

Analyte	Maximum Concentration (µg/L)	3x Action Level (mg/Kg)	10x Action Level (mg/Kg)
Copper	3.5	2.1	7.0
Associated samples: All soil samples			
Thallium	-8.2	-2.5	-8.2
Associated sample: PPG-135-B14F(12.8-13.3)			

The positive results for copper in samples PPG-135-B13H(21.5-22.5) and PPG-135-B14F(12.8-13.3) were qualified as negated (B) and estimated (J) with and overall qualification of "BJ" since the concentration of copper in these samples was >3x but ≤10x the maximum instrument blank contamination.

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The nondetect result for thallium in sample PPG-135-B14F(12.8-13.3) was qualified as estimated (UJ) due to negative instrument drift. This thallium result is usable as an estimated quantitation limit that may be biased low.

Blank contaminants were detected in the laboratory instrument blanks associated with the field blank sample in this data package. The maximum blank contamination is listed in the table below.

Analyte	Maximum Concentration (µg/L)	3x Action Level (µg/L)	10x Action Level (µg/L)
Beryllium	0.1	0.3	1.0
Potassium	-769.6	-2301	-7696
Associated sample: F122006			

The nondetect result for potassium in the field blank sample F122006 was qualified as estimated (UJ) due to negative instrument drift. This potassium result is usable as an estimated quantitation limit that may be biased low.

No validation actions were required for beryllium since this analyte was nondetect in the associated field blank sample.

Blank contaminants were detected in the laboratory method blanks associated with the soil samples in this data package. The maximum blank contamination is listed in the table below. Note that the maximum blank concentrations for all analytes were multiplied by a factor of two since all samples were analyzed at 2x dilutions for these analytes.

Analyte	Maximum Concentration (mg/Kg)	3x Action Level (mg/Kg)	10x Action Level (mg/Kg)
Beryllium	-0.024	-0.072	-0.24
Potassium	-177.7	-533.1	-1777
Associated samples: All soil samples			

The positive results for potassium in samples PPG-135-B13E(8.5-9.5), PPG-135-B13ED(8.5-9.5), PPG-135-B13F(13.5-14.0), PPG-135-B13G(17.6-18.1), PPG-135-B13H(21.5-22.5), PPG-135-B13I(24.0-24.5), PPG-135-B14E(8.5-9.0), PPG-135-B14F(12.8-13.3), and PPG-135-B14H(20.4-20.9) were qualified as estimated (J) due to negative instrument drift. These potassium results are usable as estimated values that may be biased low.

No validation actions were required for beryllium since this analyte was >10x the action level in the associated soil samples.

Blank contaminants were detected in the field blank sample F122006 (after laboratory blank actions were applied) which was associated with the soil samples in this data package. The maximum blank contamination is listed in the table below.

Analyte	Maximum Concentration (µg/L)	3x Action Level (mg/Kg)	10x Action Level (mg/Kg)
Zinc	9.9	5.9	19.8
Associated samples: All soil samples			

No validation actions were required for zinc since this analyte was >10x the action level in the associated soil samples.

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Matrix Spike Results

Sample PPG-135-B13H(21.5-22.5) was selected for matrix spike (MS) analysis for all metals in association with the soil samples in this data set. The following MS percent recoveries (%Rs) listed in the table below did not meet the quality control (QC) acceptance criteria.

Analyte	**MS %R**
Antimony	29.1
QC Limits (%)	**75-125**
Associated samples: all soils	

The nondetect results for antimony in all soil samples were qualified as estimated (UJ) due to <75% MS recovery. These antimony results are usable for project decisions as estimated quantitation limits that may be biased low.

Laboratory Duplicate Results

Sample PPG-135-B13H(21.5-22.5) was selected for laboratory duplicate analysis for all metals in association with this data set. The following table summarizes the analytes that exceeded the relative percent difference (RPD) criteria.

Analyte	**RPD (%)**
Selenium	200

Criteria: RPD < 20% (only applicable if both results are >5x sample quantitation limit (SQL))
± SQL if sample and duplicate are <5x SQL

The positive and nondetect results for selenium in all soil samples were qualified as estimated (J and UJ, respectively). These results are usable for project decisions as estimated values and quantitation limits.

Field Duplicate Results

The following table indicates the field duplicate samples and the associated STL submission number.

Sample IDs	**STL Submission Number**
PPG-135-B13E(8.5-9.5) and PPG-135-B13ED(8.5-9.5)	B141

The following table summarizes the detected analytes and the RPD criteria in field duplicate pair PPG-135-B13E(8.5-9.5) and PPG-135-B13ED(8.5-9.5).

Analyte	**PPG-135-B13E(8.5-9.5) (mg/Kg)**	**PPG-135-B13ED(8.5-9.5) (mg/Kg)**	**RPD (%)**
Aluminum	9850	9140	7.5
Arsenic	4.9	5.5	11.5
Barium	48.3	45	7.1
Beryllium	0.85	0.74	13.8
Calcium	1700	1580	7.3
Chromium	16.6	16.6	0
Cobalt	5.8	5.1	12.8

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Analyte	PPG-135-B13E(8.5-9.5) (mg/Kg)	PPG-135-B13ED(8.5-9.5) (mg/Kg)	RPD (%)
Copper	12.4	11.5	7.5
Iron	14100	13600	3.6
Lead	21.2	17.9	16.8
Magnesium	3940	3690	6.6
Manganese	373	318	15.9
Mercury	0.06	0.05	18.2
Nickel	11.4	10.8	5.4
Potassium	1450	1400	3.5
Sodium	209	193	8.0
Vanadium	33.6	31.1	7.7
Zinc	59.9	55.2	8.2

Criteria: RPD < 50% (only applicable if both results are >10x SQL)
±8x SQL if sample and duplicate are <10x SQL

No validation actions were required for any of the metals since field duplicate RPD criteria was met and precision was deemed acceptable.

Sample Quantitation Limits

It should be noted that the reporting limits for the nondetect metal results were not adjusted for the initial digestion weight due software limitations. No validation actions were taken other than to note this discrepancy.

All metals results were reported to the instrument detection limit (IDL). However in some instances, results were reported as nondetect even though a negative value exceeded the absolute value of the IDL. The laboratory policy for reporting negative values is that for analytes with SQLs <1.0 mg/Kg (i.e., 10 µg/L at the instrument), negative values are allowable at values 2x the SQL. The validator reviewed antimony, arsenic, beryllium, lead, selenium, and thallium for this negative interference. There was no evidence of potential negative matrix interference for these analytes in any of the soil or aqueous samples in this data set.

The following table indicates the positive and nondetect results that were analyzed at dilutions due to either high concentrations (exceedance of the instrument linear range) of these analytes present in the undiluted analysis resulting in potential detector saturation or high concentrations of an interfering analyte present in the undiluted analysis, which affects the accuracy of the spectral interference correction attributable to the interference.

Sample ID	Analyte	Dilution Factor
PPG-135-B13E(8.5-9.5)	All analytes, with the exception of mercury (which was analyzed at a 1x dilution)	2
PPG-135-B13ED(8.5-9.5)	All analytes, with the exception of mercury (which was analyzed at a 1x dilution)	2
PPG-135-B13F(13.5-14.0)	All analytes, with the exception of mercury (which was analyzed at a 1x dilution)	2
PPG-135-B13G(17.6-18.1)	All analytes, with the exception of mercury (which was analyzed at a 1x dilution)	2

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Sample ID	Analyte	Dilution Factor
PPG-135-B13H(21.5-22.5)	All analytes, with the exception of mercury (which was analyzed at a 1x dilution)	2
PPG-135-B13I(24.0-24.5)	All analytes, with the exception of mercury (which was analyzed at a 1x dilution)	2
PPG-135-B14E(8.5-9.0)	All analytes, with the exception of mercury (which was analyzed at a 1x dilution)	2
PPG-135-B14G(17.0-17.5)	All analytes, with the exception of mercury (which was analyzed at a 1x dilution)	2
PPG-135-B14H(20.4-20.9)	All analytes, with the exception of mercury (which was analyzed at a 1x dilution)	2
PPG-135-B14F(12.8-13.3)	All analytes, with the exception of mercury and thallium (which were analyzed at a 1x dilution)	2

No data validation actions were taken other than this notation.

Data Quality and Recommendations

In general, these data appear to be valid and may be used for decision-making purposes. All metals results were accepted with minor qualifications for copper in several soil samples due to laboratory blank contamination; for thallium and potassium in several soil and aqueous samples due to negative instrument drift; for antimony in all soil samples due to low MS recoveries; and for selenium in all soil samples due to laboratory duplicate imprecision.
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Memorandum

Date: May 17, 2007

To: Robert Falotico/Westford

From: Deb Truini/Westford

Subject: Data Validation
PPG Site 137/135/133
December 2006 Soil Sampling
Severn Trent Laboratories
Submission #B200

Distribution: D. Simmons/Westford

05510-109-0447

PP176Cr6dat.doc

A full data validation was performed by Deb Truini of ENSR on the following soil and field blank samples collected on December 21, 2006 for hexavalent chromium analysis at the PPG Site 137/135/133 – Jersey City, NJ.

Samples	
PPG-135-B17D (8.0-8.5)	PPG-135-B18E (12.0-13.0) (Matrix spike/Laboratory duplicate)
PPG-135-B17E (12.0-13.0)	PPG-135-B18F (13.2-13.7)
PPG-135-B17ED (12.0-13.0) [Field duplicate of PPG-135-B17E (12.0-13.0)]	PPG-135-B18G (16.2-16.7)
PPG-135-B17F (14.9-15.4)	PPG-135-B18H (17.5-18.0)
PPG-135-B17G (18.8-19.3)	F122106A (Field blank)
PPG-135-B18D (8.0-8.5)	

The samples were submitted to Severn Trent Laboratories (STL) in Edison, New Jersey, for analysis on December 21, 2006. STL processed and reported these samples under submission #B200. The samples were analyzed for hexavalent chromium (Cr+6) according to SW-846 Methods 3060A and 7196A. The sample results were assessed according to the New Jersey Department of Environmental Protection Standard Operating Procedures (SOPs) Revision No. 2, SOP No. 5.A.10, August 2005, "*Standard Operating Procedure (SOP) for Analytical Data Validation of Hexavalent Chromium*."

General Comments

Issues noted during validation are discussed below. No data results were rejected. Minor qualification of the data was required.

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Data Completeness

All soil sample IDs were truncated and the "PPG-135-" prefix listed on the chain-of-custody (COC) was dropped by STL on all the laboratory summary forms due to software limitations. These prefixes were retained during validation in this validation memorandum as well as the supporting worksheets. In addition, these prefixes were retained in the project database for consistency with the COC.

Matrix Spike Results

Samples PPG-135-B18E (12.0-13.0) and 133-B1E (5.4-6.4) were selected for matrix spike (MS) analysis for hexavalent chromium analysis in association with this data set. Sample 133-B1E (5.4-6.4) was reported in STL #A623. The initial recovery for the soluble matrix spike was outside the control limits of 75-125 percent (%) for sample PPG-135-B18E (12.0-13.0). The initial spike concentration for the soluble and insoluble matrix spikes for sample 133-B1E (5.4-6.4)) could not be evaluated since the spikes added since the spikes added (64.6 mg/Kg and 1144 mg/Kg) were less than 4x the native concentrations (6520 mg/Kg). The laboratory chose to re-digest and re-analyze the soil samples and all required quality control samples associated with both MS samples. Insoluble and soluble laboratory control sample (LCS) results associated with both the original analysis and re-analysis were within established control limits. A summary of sample results and associated quality control data for both sets of analyses is provided in the table below for sample PPG-135-B18E (12.0-13.0).

Parameter	Initial Analysis (Extracted 1/19/07)	Re-Analysis (Extracted 1/20/07)
Hexavalent Chromium PPG-135-B18E (12.0-13.0)	2.28 U mg/Kg	2.28 U mg/Kg
Hexavalent Chromium PPG-135-B18E (12.0-13.0) DUP	2.28 U mg/Kg	2.28 U mg/Kg
Hexavalent Chromium Laboratory Blank	< 2 mg/Kg	< 2 mg/Kg
Hexavalent Chromium Soluble Matrix Spike	64.8% Recovery	67.3% Recovery
Hexavalent Chromium Insoluble Matrix Spike	90.4% Recovery	93.9% Recovery
Hexavalent Chromium Post-Verification Spike	105% Recovery	96.0% Recovery
Hexavalent Chromium LCS Soluble	91.6 % Recovery	96.5% Recovery
Hexavalent Chromium LCS Insoluble	95.2% Recovery	111.4% Recovery
Associated samples: all soil samples		

The soluble matrix spike %Rs listed in the table above did not meet QC acceptance criteria in the initial digestion and analysis or in the re-digestion and re-analysis. The original digestion and analysis results for samples digested in this preparation batch [all soils with the exception of PPG-135-B17G (18.8-19.3) and PPG-135-B18H (17.5-18.0)] were reported since the soluble MS recovery did not improve in the re-digestion and re-analysis. The nondetect hexavalent chromium results in all soil samples were qualified as estimated (UJ) since the soluble MS recovery <75%R but >50%R. These results are usable as estimated quantitation limits that may be biased low.

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A summary of sample results and associated quality control data for both sets of analyses is provided in the table below for sample 133-B1E (5.4-6.4).

Parameter	Initial Analysis (Extracted 1/3/07)	Re-Analysis (Extracted 1/5/07)
Hexavalent Chromium 133-B1E (5.4-6.4)	6520 mg/Kg	8390 mg/Kg
Hexavalent Chromium 133-B1E (5.4-6.4) DUP	5680 mg/Kg	10100 mg/Kg
Hexavalent Chromium Laboratory Blank	< 2 mg/Kg	< 2 mg/Kg
Hexavalent Chromium Soluble Matrix Spike	356% Recovery	3731% Recovery
Hexavalent Chromium Insoluble Matrix Spike	135% Recovery	1295% Recovery
Hexavalent Chromium Post-Verification Spike	118% Recovery	92.7% Recovery
Hexavalent Chromium LCS Soluble	99.0 % Recovery	96.5% Recovery
Hexavalent Chromium LCS Insoluble	117% Recovery	130% Recovery
Associated samples: all soil samples, with the exception of PPg-135-B18F (12.0-13.0)		

The post digestion spike %R listed in the table above did not meet QC acceptance criteria in the initial digestion and analysis but met in the re-digestion and re-analysis. In addition, the insoluble LCS %R listed in the table above met QC acceptance criteria in the initial digestion and analysis but did not meet in the re-digestion and re-analysis. Therefore, the original digestion and analysis results for samples digested in this preparation batch [PPG-135-B17G (18.8-19.3) and PPG-135-B18H (17.5-18.0)] were reported since there were QC exceedances associated with both preparation batches. No validation actions were required for MS %R exceedances since the spikes could not be evaluated.

Post Digestion Spike (PDS) Results

Samples PPG-135-B18E (12.0-13.0) and 133-B1E (5.4-6.4) were selected for post digestion spike (PDS) analysis for hexavalent chromium analysis in association with this data set. Sample 133-B1E (5.4-6.4) was reported in STL #A623. Sample PPG-135-B18E (12.0-13.0) met PDS recovery criteria in both the initial digestion andanalysis and the re-digestion and re-analysis.

The following PDS percent recoveries listed in the table below did not meet the QC acceptance criteria in the initial digestion and analysis of sample 133-B1E (5.4-6.4). Note that even though the PDS met recovery criteria in the re-digestion and re-analysis, hexavalent chromium results were not reported from the re-digestion/re-analysis due to high insoluble LCS recovery

Analyte	PDS %R
Hexavalent chromium (initial analysis)	118
Hexavalent chromium (re-analysis)	Ok
QC Limits (%)	**85-115**

No validation actions were required since hexavalent chromium was nondetect in all soil samples.

One aqueous non-PPG sample was selected for the PDS analysis in association with field blank sample F122106A. No validation actions were applied for PDS exceedances in the non-PPG sample due to potential differences in the sample matrix.

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Field Duplicate Results

The following table indicates the field duplicate samples and the associated STL submission number.

Sample IDs	STL Submission Number
PPG-135-B17E (12.0-13.0) and PPG-135-B17ED (12.0-13.0)	B200

No validation actions were required since both the original and field duplicate sample results (in the original digestion and re-digestion) were nondetect for hexavalent chromium and precision was acceptable.

Laboratory Control Sample Results

No validation actions were required due to the failed hexavalent chromium insoluble LCS recovery (130%) associated with the re-digestion and re-analysis of preparation batch 4205A [PPG-135-B17G (18.8-19.3) and PPG-135-B18H (17.5-18.0)] since the hexavalent chromium results associated with this analysis were reported from the original digestion and analysis.

Sample Quantitation Limits

It should be noted that the reporting limits for the nondetect hexavalent chromium results were not adjusted for the initial digestion weight due to laboratory software limitations. No validation actions were taken other than to note this discrepancy.

Data Quality and Recommendations

In general, these data appear to be valid and may be used for decision-making purposes. The hexavalent chromium results were accepted with minor qualifications for low MS and PDS recoveries in all soils.

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Memorandum

Date: May 17, 2007

To: Robert Falotico/Westford

From: Deb Truini/Westford

Subject: Data Validation
PPG Site 137/135/133
Jersey City, New Jersey
December 2006 Soil Sampling
Severn Trent Laboratories
Submission #B200

Distribution: D. Simmons/Westford

05510-109-0447

PP176inorgdat.doc

A limited data validation was performed by Deb Truini of ENSR on the following soil and field blank samples collected on December 21, 2006 for Target Analyte List (TAL) metals analysis at the PPG Site 137/135/133 – Jersey City, NJ.

Samples	
PPG-135-B17D (8.0-8.5)	PPG-135-B18E (12.0-13.0) (Matrix spike/Laboratory duplicate)
PPG-135-B17E (12.0-13.0)	PPG-135-B18F (13.2-13.7)
PPG-135-B17ED (12.0-13.0) [Field duplicate of PPG-135-B17E (12.0-13.0)]	PPG-135-B18G (16.2-16.7)
PPG-135-B17F (14.9-15.4)	PPG-135-B18H (17.5-18.0)
PPG-135-B17G (18.8-19.3)	F122106A (Field blank)
PPG-135-B18D (8.0-8.5)	

The samples were submitted to Severn Trent Laboratories (STL) in Edison, New Jersey, for analysis on December 21, 2006. STL processed and reported these samples under submission #B200. Metals analyses were performed using SW-846 Methods 6010B and 7471A. The sample results were assessed according to the New Jersey Department of Environmental Protection Standard Operating Procedures (SOPs) Revision No. 1, SOP No. 5.A.16, May, 2002. "*Quality Assurance Data Validation of Analytical Deliverables for Inorganics (based on USEPA SW-846 Methods)*." This SOP was modified to accommodate SW-846 methods and to address situations not described in the SOP. The review was based on summary information provided on holding times, blanks, matrix spikes, laboratory duplicates, field duplicates, and laboratory control samples (LCS).

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General Comments

Issues noted during validation are discussed below. No data results were rejected. Minor qualification of the data was required.

Data Completeness

All soil sample IDs were truncated and the "PPG-135-" prefix listed on the chain-of-custody (COC) was dropped by STL on all the laboratory summary forms due to software limitations. This prefix was retained during validation in this validation memorandum as well as the supporting worksheets. In addition, this prefix was retained in the project database for consistency with the COC.

Soil field blank sample F122106A was digested according to soil methods 3050B and 7471A for all metals. No validation actions were required on this basis other than this notation.

The laboratory did not summarize the interference check solution (ICS A) results for the unspiked target analytes on a form equivalent to Form 4 due to laboratory software limitations. Nor did they provide the interelement correction factors on a form equivalent to Form 11. No validation actions were required on this basis other than this notation.

Holding Times and Sample Preservation

Documentation regarding aqueous sample pH verification upon receipt at the laboratory was not included in the data package on a sample-by-sample basis. Instead the pHs were verified during sample login and this check was documented in the laboratory Nonconformance Summary in a general statement. The form noted that "sample delivery conforms with requirements." No validation action was taken except for this notation.

Blank Results

The following table indicates the field blank sample and the associated STL submission number.

Sample IDs	STL Submission Number
F122106A	B200

Blank contaminants were not detected in field blank sample F122106A (after laboratory blank actions were applied) which was associated with all soil samples in this data set.

Blank contaminants were detected in the laboratory instrument blanks associated with the soil samples in this data package. The maximum blank contamination is listed in the table below. Note that the maximum blank concentrations for all analytes, with the exception of mercury, were multiplied by a factor of two since all samples were analyzed at 2x dilutions for these analytes.

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Analyte	Maximum Concentration (µg/L)	3x Action Level (mg/Kg)	10x Action Level (mg/Kg)
Aluminum	277.2	83.16	277.2
Barium	4.2	1.26	4.2
Cadmium	1.6	0.48	1.6
Calcium	363.4	109.02	363.4
Chromium	3.6	1.08	3.6
Iron	87.4	26.22	87.4
Lead	5.4	1.62	5.4
Magnesium	128.6	38.58	128.6
Potassium	1083.6	325.08	1083.6
Sodium	1342.2	402.66	1342.2
Zinc	13.6	4.08	13.6
Associated samples: PPG-135-B18E (12.0-13.0)			
Mercury	-0.10	-0.05	-0.17
Associated samples: all soils			
Aluminum	201.6	-60.48	201.6
Beryllium	1.0	0.30	1.0
Cadmium	0.80	0.24	0.80
Calcium	-239.2	-71.76	-239.2
Chromium	3.4	1.02	3.4
Magnesium	-219.6	-65.88	-219.6
Associated samples: PPG-135-B17D (8.0-8.5), PPG-135-B17E (12.0-13.0), PPG-135-B17ED (12.0-13.0), PPG-135-B17F (14.9-15.4), PPG-135-B17G (18.8-19.3), PPG-135-B18D (8.0-8.5), PPG-135-B18F (13.2-13.7), PPG-135-B18G (16.2-16.7), PPG-135-B18H (17.5-18.0)			

The positive results for beryllium in samples PPG-135-B18F (13.2-13.7), PPG-135-B18G (16.2-16.7), and PPG-135-B18H (17.5-18.0) were qualified as negated (B) since the concentration of beryllium in these samples were ≤3x the maximum instrument blank contamination.

The positive results for beryllium in samples PPG-135-B17D (8.0-8.5), PPG-135-B17E (12.0-13.0), PPG-135-B17ED (12.0-13.0), PPG-135-B17F (14.9-15.4), PPG-135-B17G (18.8-19.3) and PPG-135-B18D (8.0-8.5); and for sodium in sample PPG-135-B18E (12.0-13.0) were qualified as negated (B) and estimated (J) with and overall qualification of "BJ" since the concentrations of beryllium and sodium in these samples were >3x but ≤10x the maximum instrument blank contamination.

The positive and nondetect results for mercury in samples PPG-135-B17D (8.0-8.5), PPG-135-B17ED (12.0-13.0), PPG-135-B17F (14.9-15.4), PPG-135-B17G (18.8-19.3), PPG-135-B18D (8.0-8.5), PPG-135-B18E (12.0-13.0), PPG-135-B18F (13.2-13.7), PPG-135-B18G (16.2-16.7), and PPG-135-B18H (17.5-18.0) were qualified as estimated (J and UJ, respectively) due to negative instrument drift. These mercury results are usable as estimated values and quantitation limits that may be biased low.

No validation actions were required for aluminum, barium, cadmium, calcium, chromium, iron, lead, magnesium, potassium, and zinc since these analytes were either nondetect or > 10x the action level in all associated soil samples.

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Blank contaminants were detected in the laboratory instrument blanks associated with the field blank sample in this data package. The maximum blank contamination is listed in the table below.

Analyte	Maximum Concentration (µg/L)	3x Action Level (µg/L)	10x Action Level (µg/L)
Aluminum	-100.8	-302.4	-1008
Beryllium	0.50	1.5	5.0
Cadmium	0.40	1.2	4.0
Calcium	-119.6	-358.8	-1196
Chromium	1.7	5.1	17
Magnesium	-109.8	-329.4	-1098
Mercury	-0.1	-0.3	-1.0
Associated sample: F122106A			

The nondetect results for aluminum, calcium, magnesium, and mercury in sample F122106A were qualified as estimated (UJ) due to negative instrument drift. These aluminum, calcium, magnesium, and mercury results are usable as estimated quantitation limits that may be biased low.

No validation actions were required for beryllium, cadmium, and chromium since these analytes were nondetect in the associated field blank sample.

Blank contaminants were detected in the laboratory method blanks associated with the soil samples in this data package. The maximum blank contamination is listed in the table below. Note that the maximum blank concentrations for all analytes, with the exception of mercury, were multiplied by a factor of two since all samples were analyzed at 2x dilutions for these analytes.

Analyte	Maximum Concentration (mg/Kg)	3x Action Level (mg/Kg)	10x Action Level (mg/Kg)
Potassium	98.726	296.178	987.26
Sodium	114.604	343.812	1146.04
Associated samples: PPG-135-B17D (8.0-8.5), PPG-135-B17E (12.0-13.0), PPG-135-B17ED (12.0-13.0), PPG-135-B17F (14.9-15.4), PPG-135-B17G (18.8-19.3), PPG-135-B18D (8.0-8.5), PPG-135-B18F (13.2-13.7), PPG-135-B18G (16.2-16.7), PPG-135-B18H (17.5-18.0)			

The positive results for potassium in samples PPG-135-B17D (8.0-8.5), PPG-135-B17E (12.0-13.0), PPG-135-B17ED (12.0-13.0), PPG-135-B17F (14.9-15.4), PPG-135-B17G (18.8-19.3), PPG-135-B18D (8.0-8.5), PPG-135-B18F (13.2-13.7), PPG-135-B18G (16.2-16.7), PPG-135-B18H (17.5-18.0); and for sodium in samples PPG-135-B17D (8.0-8.5), PPG-135-B17E (12.0-13.0), PPG-135-B17ED (12.0-13.0), and PPG-135-B18D (8.0-8.5) were qualified as negated (B) and estimated (J) with and overall qualification of "BJ" since the concentrations of potassium and sodium in these samples were >3x but ≤10x the maximum instrument blank contamination.

Blank contaminants were detected in the laboratory method blanks associated with the field blank sample in this data package. The maximum blank contamination is listed in the table below.

Analyte	Maximum Concentration (µg/L)	3x Action Level (µg/L)	10x Action Level (µg/L)
Potassium	493.63	1480.89	4936.3
Sodium	573.02	1719.06	5730.2
Associated sample: F122106A			

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No validation actions were required for potassium and sodium since these analytes were nondetect in the associated field blank sample.

Matrix Spike Results

Sample PPG-135-B18E (12.0-13.0) was selected for matrix spike (MS) analysis for all metals analysis in association with this data set. The following MS percent recoveries (%Rs) listed in the table below did not meet the QC acceptance criteria for sample PPG-135-B18E (12.0-13.0).

Analyte	**MS %R**
Antimony	53.1
QC Limits (%)	**75-125**
Associated samples: all soils	

The nondetect results for antimony in all soil samples were qualified as estimated (UJ) due to <75% MS recovery. These antimony results are usable for project decisions as estimated quantitation limits that may be biased low.

Field Duplicate Results

The following table indicates the field duplicate samples and the associated STL submission number.

Sample IDs	**STL Submission Number**
PPG-135-B17E (12.0-13.0) and PPG-135-B17ED (12.0-13.0)	B200

The following table summarizes the detected analytes and the relative percent difference (RPD) criteria in field duplicate pair PPG-135-B17E (12.0-13.0) and PPG-135-B17ED (12.0-13.0). The RPD for mercury was >50%, however, precision was acceptable for this analyte since the original and field duplicate results were <10x the sample quantitation limits (SQL) and the absolute difference between the results was <8x the SQLs.

Analyte	**PPG-135-B17E (12.0-13.0) (mg/Kg)**	**PPG-135-B17ED (12.0-13.0) (mg/Kg)**	**RPD (%)**
Aluminum	7090	8860	22.2
Arsenic	2.2	3.2	37.0
Barium	37.0	41.5	11.5
Beryllium	0.52	0.61	15.9
Calcium	1390	1960	34.0
Chromium	9.9	14.3	36.4
Cobalt	4.1	5.7	32.7
Copper	10.0	10.7	6.8
Iron	10200	14000	31.4
Lead	22.5	21.0	6.9
Magnesium	1830	2450	29.0
Manganese	213	616	97.2
Mercury	0.25	0.05	133.3
Nickel	7.3	10.2	33.1
Potassium	758	1090	35.9
Sodium	599	698	15.3
Vanadium	16.3	20.3	21.9

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Analyte	PPG-135-B17E (12.0-13.0) (mg/Kg)	PPG-135-B17ED (12.0-13.0) (mg/Kg)	RPD (%)
Zinc	61.8	75.9	20.5

Criteria: RPD < 50% [only applicable if both results are >10x sample quantitation limit (SQL)]
±8x SQL if sample and duplicate are <10x SQL

The positive manganese results in all soil samples were qualified as estimated (J). These manganese results are usable as estimated values.

Sample Quantitation Limits

It should be noted that the reporting limits for the nondetect metal results were not adjusted for the initial digestion weight due to laboratory software limitations. No validation actions were taken other than to note this discrepancy.

All metals results were reported to the instrument detection limit (IDL). However in some instances, results were reported as nondetect event though a negative value exceeded the absolute value of the IDL. The laboratory policy for reporting negative values is that for analytes with SQLs <1.0 mg/Kg (i.e., 10 µg/L at the instrument), negative values are allowable at values 2x the SQL (i.e., 20 µg/L at the instrument). The validator reviewed antimony, arsenic, beryllium, lead, selenium, and thallium for this negative interference. The nondetect thallium results in samples PPG-135-B17D (8.0-8.5) and F122106A were qualified as estimated (UJ) due to potential negative matrix interference. These results are usable as estimated quantitation limits that may be biased low.

The following table indicates the positive and nondetect results that were analyzed at dilutions due to either high concentrations (exceedance of the instrument linear range) of these analytes present in the undiluted analysis resulting in potential detector saturation or high concentrations of an interfering analyte present in the undiluted analysis, which affects the accuracy of the spectral interference correction attributable to the interference.

Sample ID	Analyte	Dilution Factor
PPG-135-B17D (8.0-8.5)	All analytes, with the exception of mercury (which was analyzed at a 1x dilution)	2
PPG-135-B17E (12.0-13.0)	All analytes, with the exception of mercury (which was analyzed at a 1x dilution)	2
PPG-135-B17ED (12.0-13.0)	All analytes, with the exception of mercury (which was analyzed at a 1x dilution)	2
PPG-135-B17F (14.9-15.4)	All analytes, with the exception of mercury and thallium (which were analyzed at 1x dilutions)	2
PPG-135-B17G (18.8-19.3)	All analytes, with the exception of mercury (which was analyzed at a 1x dilution)	2
PPG-135-B18D (8.0-8.5)	All analytes, with the exception of mercury (which was analyzed at a 5x dilution)	2
PPG-135-B18E (12.0-13.0)	All analytes, with the exception of mercury (which was analyzed at a 1x dilution)	2
PPG-135-B18F (13.2-13.7)	All analytes, with the exception of mercury and thallium (which were analyzed at 1x dilutions)	2

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Sample ID	Analyte	Dilution Factor
PPG-135-B18G (16.2-16.7)	All analytes, with the exception of mercury and thallium (which were analyzed at 1x dilutions)	2
PPG-135-B18H (17.5-18.0)	All analytes, with the exception of mercury (which was analyzed at a 1x dilution)	2

No data validation actions were taken other than this notation.

Data Quality and Recommendations

In general, these data appear to be valid and may be used for decision-making purposes. All metals results were accepted with minor qualifications for beryllium, sodium, potassium in several soil samples due to laboratory blank contamination; for aluminum, calcium, magnesium, and mercury in several soil and aqueous samples due to negative instrument drift; for antimony in all soil samples due to low MS recovery; for manganese in all soil samples due the field duplicate RPD exceedance; and for thallium in several soil and aqueous samples due to potential negative matrix interference..

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Memorandum

Date: May 22, 2007

To: Robert Falotico/Westford

From: Deb Truini/Westford

Subject: Data Validation
PPG Site 137/135/133
December 2006 Soil Sampling
Severn Trent Laboratories
Submission #B244

Distribution: D. Simmons/Westford

05510-109-0447

PP178Cr6dat.doc

A full data validation was performed by Deb Truini of ENSR on the following soil and field blank samples collected on December 22, 2006 for hexavalent chromium analysis at the PPG Site 137/135/133 – Jersey City, NJ.

Samples	
PPG-135-B16D (8.0-8.5)	PPG-135-B15E (12.0-12.5)
PPG-135-B16E (12.2-13.2)	PPG-135-B15F (13.7-14.2)
PPG-135-B16ED (12.2-13.2) [Field duplicate of PPG-135-B16E (12.2-13.2)]	PPG-135-B15G (17.5-18.0)
PPG-135-B16F (16.2-16.7)	PPG-135-B15H (21.5-22.0)
PPG-135-B16G (20.0-20.5)	PPG-135-B15I (23.0-23.5)
PPG-135-B16H (20.9-21.4)	F122206 (Field blank)
PPG-135-B15D (8.0-8.5) (Matrix spike/Laboratory duplicate)	

The samples were submitted to Severn Trent Laboratories (STL) in Edison, New Jersey, for analysis on December 22, 2006. STL processed and reported these samples under submission #B244. The samples were analyzed for hexavalent chromium (Cr+6) according to SW-846 Methods 3060A and 7196A. The sample results were assessed according to the New Jersey Department of Environmental Protection Standard Operating Procedures (SOPs) Revision No. 2, SOP No. 5.A.10, August 2005, "*Standard Operating Procedure (SOP) for Analytical Data Validation of Hexavalent Chromium*."

General Comments

Issues noted during validation are discussed below. No data results were rejected. Minor qualification of the data was required.

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Data Completeness

All soil sample IDs were truncated and the "PPG-135-" prefix listed on the chain-of-custody (COC) was dropped by STL on all the laboratory summary forms due to software limitations. These prefixes were retained during validation in this validation memorandum as well as the supporting worksheets. In addition, these prefixes were retained in the project database for consistency with the COC.

Holding Times and Sample Preservation

The cooler temperature upon receipt at the laboratory was slightly below the acceptance range of 4°C ± 2°C (1°C). No data validation actions were taken on this basis.

Matrix Spike Results

Samples PPG-135-B16H (20.9-21.4) and PPG-135-B15D (8.0-8.5) were selected for matrix spike (MS) analysis for hexavalent chromium analysis in association with this data set. Both the soluble and insoluble matrix spikes met recovery control limits of 75-125 percent (%) in sample PPG-135-B15D (8.0-8.5). A summary of sample results and associated quality control data for both sets of analyses is provided in the table below for sample PPG-135-B16H (20.9-21.4).

Parameter	Initial Analysis (Extracted 1/08/07)	Re-Analysis (Extracted 1/11/07)
Hexavalent Chromium PPG-135-B16H (20.9-21.4)	2.68 U mg/Kg	2.68 U mg/Kg
Hexavalent Chromium PPG-135-B16H (20.9-21.4) DUP	2.68 U mg/Kg	2.68 U mg/Kg
Hexavalent Chromium Laboratory Blank	< 2 mg/Kg	< 2 mg/Kg
Hexavalent Chromium Soluble Matrix Spike	0% Recovery	0% Recovery
Hexavalent Chromium Insoluble Matrix Spike	24.8% Recovery	86.0% Recovery
Hexavalent Chromium Post-Verification Spike	110% Recovery	97.9% Recovery
Hexavalent Chromium LCS Soluble	94.1% Recovery	104.0% Recovery
Hexavalent Chromium LCS Insoluble	121% Recovery	117% Recovery
Associated samples: all soil samples with the exception of sample PPG-135-B15D (8.0-8.5)		

The initial recoveries for the soluble and insoluble matrix spikes were outside the control limits of 75-125% for sample PPG-135-B16H (20.9-21.4). The laboratory chose to re-digest and re-analyze the soil samples and all required quality control samples associated with failed MS sample PPG-135-B16H (20.9-21.4). Insoluble and soluble laboratory control sample (LCS) results associated with both the original analysis and re-analysis were within established control limits with the exception of the insoluble LCS associated with the original digestion and analysis of MS sample PPG-135-B16H (20.9-21.4).

The soluble and insoluble matrix spike %Rs as well as the insoluble LCS listed in the table above did not meet QC acceptance criteria in the initial digestion and analysis but the insoluble MS and LCS met criteria in the re-digestion and re-analysis. Therefore, the re-digestion and re-analysis results for samples digested in preparation batch #4212 [PPG-135-B16H (20.9-21.4) and PPG-135-B15I (23.0-23.5)] were reported since there was improvement in the MS and LCS recoveries. The positive and nondetect hexavalent chromium results in all soil samples were qualified as estimated (J and UJ, respectively) since the soluble MS recovery was <50 %R and the MS sample matrix was determined to be of a reducing nature. Note that MS samples PPG-135-B16H (20.9-21.4) and PPG-135-B15D (8.0-8.5) were the only samples analyzed for the ancillary parameters of pH and Eh (see table below). The validator chose to qualify all hexavalent chromium results without supporting ancillary data since the matrix would either be determined to be reducing (MS would be applicable) or oxidizing (MS would potentially not be applicable). In both scenarios, the result would be qualified as estimated (J and UJ). These results are usable as estimated values and quantitation limits that may be biased low.

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Sample ID	Eh (mV)	pH (su)
PPG-135-B15I (23.0-23.5)	515	3.64
PPG-135-B16H (20.9-21.4)	527	3.74

Field Duplicate Results

The following table indicates the field duplicate samples and the associated STL submission number.

Sample IDs	STL Submission Number
PPG-135-B16E (12.2-13.2) and PPG-135-B16ED (12.2-13.2)	B244

No validation actions were required since original and field duplicate sample results were nondetect for hexavalent chromium and precision was acceptable.

Laboratory Control Sample Results

No validation actions were required due to the failed hexavalent chromium insoluble LCS recovery (121%) associated with the original digestion and analysis of preparation batch #4212 [PPG-135-B16H (20.9-21.4) and PPG-135-B15I (23.0-23.5)] since the hexavalent chromium results associated with this analysis were reported from the re-digestion and re-analysis.

Sample Quantitation Limits

It should be noted that the reporting limits for the nondetect hexavalent chromium results were not adjusted for the initial digestion weight due to laboratory software limitations. No validation actions were taken other than to note this discrepancy.

The nondetect hexavalent chromium results in field duplicate pair PPG-135-B16E (12.2-13.2) and PPG-135-B16ED (12.2-13.2) were qualified as estimated (UJ) due to potential heterogeneity as evidenced by dissimilar percent solids (86.6% versus 42.6%). These results are usable as estimated quantitation limits.

Data Quality and Recommendations

In general, these data appear to be valid and may be used for decision-making purposes. The hexavalent chromium results were accepted with minor qualifications for all soils, with the exception of sample PPG-135-B15D (8.0-8.5), due to low MS recovery (with evidence of a reducing matrix); and for two soil samples due to potential heterogeneity as evidenced by dissimilar percent solids in the field duplicate par.

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Memorandum

Date: May 22, 2007

To: Robert Falotico/Westford

From: Deb Truini/Westford

Subject: Data Validation
PPG Site 137/135/133
Jersey City, New Jersey
December 2006 Soil Sampling
Severn Trent Laboratories
Submission #B244

Distribution: D. Simmons/Westford

05510-109-0447

PP178inorgdat.doc

A limited data validation was performed by Deb Truini of ENSR on the following soil and field blank samples collected on December 22, 2006 for Target Analyte List (TAL) metals analysis at the PPG Site 137/135/133 – Jersey City, NJ.

Samples	
PPG-135-B16D (8.0-8.5)	PPG-135-B15E (12.0-12.5)
PPG-135-B16E (12.2-13.2)	PPG-135-B15F (13.7-14.2)
PPG-135-B16ED (12.2-13.2) [Field duplicate of PPG-135-B16E (12.2-13.2)]	PPG-135-B15G (17.5-18.0)
PPG-135-B16F (16.2-16.7)	PPG-135-B15H (21.5-22.0)
PPG-135-B16G (20.0-20.5)	PPG-135-B15I (23.0-23.5)
PPG-135-B16H (20.9-21.4)	F122206 (Field blank)
PPG-135-B15D (8.0-8.5) (Matrix spike/Laboratory duplicate)	

The samples were submitted to Severn Trent Laboratories (STL) in Edison, New Jersey, for analysis on December 22, 2006. STL processed and reported these samples under submission #B244. Metals analyses were performed using SW-846 Methods 6010B and 7471A. The sample results were assessed according to the New Jersey Department of Environmental Protection Standard Operating Procedures (SOPs) Revision No. 1, SOP No. 5.A.16, May, 2002. "*Quality Assurance Data Validation of Analytical Deliverables for Inorganics (based on USEPA SW-846 Methods)*." This SOP was modified to accommodate SW-846 methods and to address situations not described in the SOP. The review was based on summary information provided on holding times, blanks, matrix spikes, laboratory duplicates, field duplicates, and laboratory control samples (LCS).

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General Comments

Issues noted during validation are discussed below. No data results were rejected. Minor qualification of the data was required.

Data Completeness

All soil sample IDs were truncated and the "PPG-135-" prefix listed on the chain-of-custody (COC) was dropped by STL on all the laboratory summary forms due to software limitations. This prefix was retained during validation in this validation memorandum as well as the supporting worksheets. In addition, this prefix was retained in the project database for consistency with the COC.

Soil field blank sample F122206 was digested according to soil methods 3050B and 7471A for all metals. No validation actions were required on this basis other than this notation.

The laboratory did not summarize the interference check solution (ICS A) results for the unspiked target analytes on a form equivalent to Form 4 due to laboratory software limitations. Nor did they provide the interelement correction factors on a form equivalent to Form 11. No validation actions were required on this basis other than this notation.

Holding Times and Sample Preservation

Documentation regarding aqueous sample pH verification upon receipt at the laboratory was not included in the data package on a sample-by-sample basis. Instead the pHs were verified during sample login and this check was documented in the laboratory Nonconformance Summary in a general statement. The form noted that "sample delivery conforms with requirements." No validation action was taken except for this notation.

The cooler temperature upon receipt at the laboratory was slightly below the acceptance range of 4°C ± 2°C (1˚C). No data validation actions were taken on this basis.

Blank Results

The following table indicates the field blank sample and the associated STL submission number.

Sample IDs	STL Submission Number
F122206	B244

Blank contaminants were detected in the laboratory instrument blanks associated with the soil samples in this data package. The maximum blank contamination is listed in the table below. Note that the maximum blank concentrations for all analytes, with the exception of mercury, were multiplied by a factor of two since all samples were analyzed at 2x dilutions for these analytes.

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Analyte	Maximum Concentration (µg/L)	3x Action Level (mg/Kg)	10x Action Level (mg/Kg)
Beryllium	0.20	0.06	0.20
Copper	7.0	2.1	7.0
Mercury	-0.1	-0.05	-0.17
Associated samples: all soils			
Thallium	15.6	4.68	15.6
Associated samples: PPG-135-B16ED (12.2-13.2)			

The positive results for copper in samples PPG-135-B16E (12.2-13.2) and PPG-135-B16ED (12.2-13.2) were qualified as negated (B) and estimated (J) with and overall qualification of "BJ" since the concentrations of copper in these samples were >3x but ≤10x the maximum instrument blank contamination.

The positive and nondetect results for mercury in all soil samples were qualified as estimated (J and UJ, respectively) due to negative instrument drift. These mercury results are usable as estimated values and quantitation limits that may be biased low.

No validation actions were required for beryllium and thallium since these analytes were either nondetect or > 10x the action level in all associated soil samples.

Blank contaminants were detected in the laboratory instrument blanks associated with the field blank sample in this data package. The maximum blank contamination is listed in the table below.

Analyte	Maximum Concentration (µg/L)	3x Action Level (µg/L)	10x Action Level (µg/L)
Beryllium	0.10	0.30	1.0
Copper	3.5	10.5	35.0
Mercury	-0.10	-0.30	-1.0
Associated sample: F122206			

The nondetect result mercury in sample F122206 was qualified as estimated (UJ) due to negative instrument drift. This mercury result is usable as an estimated quantitation limit that may be biased low.

No validation actions were required for beryllium and copper since these analytes were nondetect in the associated field blank sample.

Blank contaminants were detected in the laboratory method blanks associated with the soil samples in this data package. The maximum blank contamination is listed in the table below. Note that the maximum blank concentrations for all analytes, with the exception of mercury, were multiplied by a factor of two since all samples were analyzed at 2x dilutions for these analytes.

Analyte	Maximum Concentration (mg/Kg)	3x Action Level (mg/Kg)	10x Action Level (mg/Kg)
Potassium	-171.558	-514.674	-1715.58
Associated samples: all soils			

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The positive and nondetect results for potassium in soil samples PPG-135-B16D (8.0-8.5), PPG-135-B16E (12.2-13.2), PPG-135-B16H (20.9-21.4), PPG-135-B15D (8.0-8.5), PPG-135-B15E (12.0-12.5), and PPG-135-B15I (23.0-23.5) were qualified as estimated (J and UJ, respectively) due to negative instrument drift. These potassium results are usable as estimated values and quantitation limits that may be biased low.

Blank contaminants were detected in the laboratory method blanks associated with the field blank sample in this data package. The maximum blank contamination is listed in the table below.

Analyte	Maximum Concentration (µg/L)	3x Action Level (µg/L)	10x Action Level (µg/L)
Potassium	-857.79	-2573.337	-8577.9
Associated sample: F122206			

The nondetect result for potassium in sample F122206 was qualified as estimated (UJ) due to negative instrument drift. This potassium result is usable as an estimated quantitation limit that may be biased low.

Blank contaminants were detected in the field blank sample F122206 (after laboratory blank actions were applied) which was associated with the soil samples in this data package. The field blank contamination is listed in the table below.

Analyte	Maximum Concentration (µg/L)	3x Action Level (mg/Kg)	10x Action Level (mg/Kg)
Aluminum	95.6	28.68	95.6
Calcium	96.4	28.92	96.4
Zinc	13.2	3.96	13.2
Associated samples: all soils			

No validation actions were required for aluminum, calcium, and zinc since these analytes were > 10x the action level in all associated soil samples.

Matrix Spike Results

Sample PPG-135-B15D (8.0-8.5) was selected for matrix spike (MS) analysis for all metals analysis in association with this data set. The following MS percent recoveries (%Rs) listed in the table below did not meet the QC acceptance criteria for sample PPG-135-B15D (8.0-8.5).

Analyte	MS %R
Antimony	44.7
Manganese	57.2
Potassium	74.3
QC Limits (%)	**75-125**
Associated samples: all soils	

The nondetect results for antimony in all soil samples; and the positive results for manganese and potassium in all soil samples were qualified as estimated (J and UJ, respectively) due to <75% MS recoveries. These antimony, manganese, and potassium results are usable for project decisions as estimated values and quantitation limits that may be biased low.

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Field Duplicate Results

The following table indicates the field duplicate samples and the associated STL submission number.

Sample IDs	STL Submission Number
PPG-135-B16E (12.2-13.2) and PPG-135-B16ED (12.2-13.2)	B244

The following table summarizes the detected analytes and the relative percent difference (RPD) criteria in field duplicate pair PPG-135-B16E (12.2-13.2) and PPG-135-B16ED (12.2-13.2).

Analyte	PPG-135-B16E (12.2-13.2) (mg/Kg)	PPG-135-B16ED (12.2-13.2) (mg/Kg)	RPD (%)
Aluminum	9520	21700	78.0
Arsenic	5.3	14.6	93.5
Barium	24.2	49.5	68.7
Beryllium	0.51	0.89	54.3
Calcium	1280	2270	55.8
Chromium	16.3	37.8	79.5
Cobalt	4.8	13.6	95.7
Copper	7.6	16.2	72.3
Iron	16700	34500	69.5
Lead	13.6	19.0	33.1
Magnesium	3390	7020	69.7
Manganese	163	260	45.9
Mercury	0.03	0.05	50.0
Nickel	13.4	34.0	86.9
Potassium	1930	4440	78.8
Sodium	2640	5190	65.1
Vanadium	22.4	50.7	77.4
Zinc	42.1	91.8	74.2

Criteria: RPD < 50% [only applicable if both results are >10x sample quantitation limit (SQL)]
±8x SQL if sample and duplicate are <10x SQL

The validator chose to not apply validation actions as a result of RPD exceedances in this field duplicate pair to all soil samples in this data set since there appears to be evidence of sample heterogeneity in either sampling or sample aliquoting for this pair (see Sample Quantitation Limits below for discussion on percent solids). The field duplicate results from all field duplicate pairs collected around the same time as samples PPG-135-B16E (12.2-13.2) and PPG-135-B16ED (12.2-13.2) demonstrate reasonable precision suggesting the exceedances associated this pair may be an anomaly. All positive and nondetect metals, with the exception of copper, in samples PPG-135-B16E (12.2-13.2) and PPG-135-B16ED (12.2-13.2) were qualified as estimated (J and UJ, respectively) since more than half of the analytes exceeded field duplicate RPD criteria. These metals results are usable as estimated values and quantitation limits. It should be noted that although the positive copper results in samples PPG-135-B16E (12.2-13.2) and PPG-135-B16ED (12.2-13.2) should have been qualified as estimated (J) due to the field duplicate RPD exceedance, no further actions were taken since these results were previously qualified as negated and estimated (BJ) due to blank contamination (see Blank Results, above).

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Sample Quantitation Limits

It should be noted that the reporting limits for the nondetect metal results were not adjusted for the initial digestion weight due to laboratory software limitations. No validation actions were taken other than to note this discrepancy.

All positive and nondetect metals, with the exception of copper, in samples PPG-135-B16E (12.2-13.2) and PPG-135-B16ED (12.2-13.2) were qualified as estimated (UJ) due to potential heterogeneity as evidenced by dissimilar percent solids (86.6% versus 42.6%). These results are usable as estimated values and quantitation limits. It should be noted that although the positive copper results in samples PPG-135-B16E (12.2-13.2) and PPG-135-B16ED (12.2-13.2) should have been qualified as estimated (J) due to the potential heterogenity, no further actions were taken since these results were previously qualified as n negated and estimated (BJ) due to blank contamination (see Blank Results, above).

All metals results were reported to the instrument detection limit (IDL). However in some instances, results were reported as nondetect event though a negative value exceeded the absolute value of the IDL. The laboratory policy for reporting negative values is that for analytes with sample quantitation limits (SQLs) <1.0 mg/Kg (i.e., 10 µg/L at the instrument), negative values are allowable at values 2x the SQL. The validator reviewed antimony, arsenic, beryllium, lead, selenium, and thallium for this negative interference. There was no evidence of potential negative matrix interference for these analytes in any of the soil or aqueous samples in this data set.

The following table indicates the positive and nondetect results that were analyzed at dilutions due to either high concentrations (exceedance of the instrument linear range) of these analytes present in the undiluted analysis resulting in potential detector saturation or high concentrations of an interfering analyte present in the undiluted analysis, which affects the accuracy of the spectral interference correction attributable to the interference.

Sample ID	Analyte	Dilution Factor
PPG-135-B16D (8.0-8.5)	All analytes, with the exception of mercury (which was analyzed at a 1x dilution)	2
PPG-135-B16E (12.2-13.2)	All analytes, with the exception of mercury (which was analyzed at a 1x dilution)	2
PPG-135-B16ED (12.2-13.2)	All analytes, with the exception of mercury and thallium (which were analyzed at 1x dilutions)	2
PPG-135-B16F (16.2-16.7)	All analytes, with the exception of mercury (which was analyzed at a 1x dilution)	2
PPG-135-B16G (20.0-20.5)	All analytes, with the exception of mercury (which was analyzed at a 1x dilution)	2
PPG-135-B16H (20.9-21.4)	All analytes, with the exception of mercury (which was analyzed at a 1x dilution)	2
PPG-135-B15D (8.0-8.5)	All analytes, with the exception of mercury (which was analyzed at a 1x dilution)	2
PPG-135-B15E (12.0-12.5)	All analytes, with the exception of mercury (which was analyzed at a 1x dilution)	2
PPG-135-B15F (13.7-14.2)	All analytes, with the exception of mercury (which was analyzed at a 1x dilution)	2

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Sample ID	Analyte	Dilution Factor
PPG-135-B15G (17.5-18.0)	All analytes, with the exception of mercury (which was analyzed at a 1x dilution)	2
PPG-135-B15H (21.5-22.0)	All analytes, with the exception of mercury (which was analyzed at a 1x dilution)	2
PPG-135-B15I (23.0-23.5)	All analytes, with the exception of mercury (which was analyzed at a 1x dilution)	2

No data validation actions were taken other than this notation.

Data Quality and Recommendations

In general, these data appear to be valid and may be used for decision-making purposes. All metals results were accepted with minor qualifications for copper in several soil samples due to laboratory blank contamination; for mercury and potassium in several soil and aqueous samples due to negative instrument drift; for antimony, manganese, and potassium in all soil samples due to low MS recoveries; and all metals, with the exception of copper, in the field duplicate pair due to potential heterogeneity as evidenced by dissimilar percent solids and exceedance of more than half of the analytes for field duplicate RPD criteria in the field duplicate pair.

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Data Validation Report

Project:	PPG Industries 137/135/133
Laboratory:	Severn Trent Laboratories (STL), Edison, NJ
Laboratory Job No.:	E267
Analysis/Method:	TAL Metals/SW-846 6010B/7471A
Validation Level:	Limited
Site Location/Address:	PPG Industries 137/135/133 Soil Sampling, Jersey City, NJ
AECOM Project No:	60502076 – GA.DE.TEE.ASM-Al Smith Moving TEE
Prepared by: Sharon McKechnie/AECOM	Completed on: 02/13/2017
Reviewed by: Paula DiMattei/AECOM	File Name : E267 _2017_02_03-ID

A limited data validation was performed by Lisa Krowitz of AECOM (Legacy ENSR) on May 22, 2007; however, a formal data validation report was not completed at that time. Due to a request for a formal validation report on January 31, 2017, the results of the original 2007 validation are summarized in memo format below. Validation and qualification actions reflect those in effect on May 22, 2007.

Introduction

The sample results were assessed according to the New Jersey Department of Environmental Protection Standard Operating Procedures (SOPs) Revision No. 1, SOP No. 5.A.16, May, 2002. "*Quality Assurance Data Validation of Analytical Deliverables for Inorganics (based on USEPA SW-846 Methods)*." This SOP was modified to accommodate SW-846 methods and to address situations not described in the SOP. The review was based on summary information provided on holding times, blanks, matrix spikes, laboratory duplicates, field duplicates, and laboratory control samples (LCS).

The results of quality control data analyzed with site samples were used to assess the overall reliability of the data. The following qualifiers were used to identify data quality issues:

U: Indicates the analyte was not detected in the sample above the sample reporting limit.

J: Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

UJ: Indicates the analyte was not detected above the reporting limit and the reporting limit was approximate.

UB: The analyte concentration is less than or equal to three (3) times the concentration in the associated method/prep blank. The presence of the analyte in the sample is negated (UB) due to laboratory contamination.

JB: The analyte concentration is greater than three (3) times, but less than or equal to ten (10) times the concentration in the associated method/prep blank. The presence of that analyte in the sample is considered "real". The concentration is quantitatively qualified (JB) due to method blank contamination.

R: The sample result was rejected due to serious deficiencies; the presence or absence of the analyte could not be confirmed.

RA: The sample result was rejected due to NJ specific data validation QC requirements; however, the result is usable for project objectives. Refer to the Data Quality and Usability section in this data validation report for further discussion.

Sample Information

The samples listed below were collected by ENSR (AECOM) on March 22 and 23, 2007 as part of the PPG Industries 137/135/133 Soil Sampling, Jersey City, NJ. Only the samples and parameters listed below were validated.

Field ID	Laboratory ID	Matrix	Fraction
135-1BE_5.2-5.7	815726	Soil	TAL Metals and Mercury
135-1BF_9.0-9.4	815727	Soil	TAL Metals and Mercury
135-1BG_13.0-13.5	815728	Soil	TAL Metals and Mercury
135-1BH_14.0-15.0	815729	Soil	TAL Metals and Mercury
135-1BHD_14.0-15.0 (Field Duplicate of 135-1BH_14.0-15.0)	815730	Soil	TAL Metals and Mercury
135-1BI_16.0-17.0	815731	Soil	TAL Metals and Mercury
135-1BJ_17.3-18.3	816122	Soil	TAL Metals and Mercury
135-1BK_18.3-18.8	816123	Soil	TAL Metals and Mercury
F032207 (Field Blank)	815732	Aqueous	TAL Metals and Mercury
F032307 (Field Blank)	816127	Aqueous	TAL Metals and Mercury

General Comments

COC/Sample IDs

All soil sample IDs were truncated and the “135-“ prefix listed on the chain-of-custody (COC) was dropped by STL on all the laboratory summary forms due to software limitations. These prefixes were retained during validation in this validation memorandum as well as the supporting worksheets. In addition, these prefixes were retained in the project database for consistency with the COC.

Data Completeness

The laboratory failed to include the results of the aqueous method and calibration blanks associated with the aqueous field blank samples. Refer to the field blank section below for data impact.

Methods

Aqueous field blank samples F032207 and F032307 were digested according to soil methods 3050B and 7471A for all metals. No validation actions were required on this basis other than this notation.

Quality control (QC) issues identified during validation are discussed below.

Blank Results

Field Blanks

The following table indicates the field blank (FB) samples and the associated STL submission number.

Sample	STL Submission Number
F032207	815732
F032307	816127

The laboratory data report did not include calibration or method blank information for the aqueous FBs; therefore, all FB detects were applied to the associated soil blanks. Positive results in the FB are listed in the table below.

Analyte	Result	Result	3X	10X	Sample Actions
Equipment Blank F032207	**ug/l**	***mg/kg**	**mg/kg**	**mg/kg**	
CALCIUM METAL	49.6	4.96	14.88	49.6	All >10X EB, No Action
* An initial weight of 1.00 g and final volume of 100 ml was used for conversion from ug/L to mg/kg					
Associated samples: All except 135-1BJ(17.3-18.3) and 135-1BK(18.3-18.8					

Analyte	Result	Result	3X	10X	Sample Actions
Equipment Blank F032307	**ug/l**	***mg/kg**	**mg/kg**	**mg/kg**	
CALCIUM METAL	43.0	4.3	12.9	43	All >10X EB, No Action
ZINC	7.4	0.74	2.22	7.4	All >10X EB, No Action
* An initial weight of 1.00 g and final volume of 100 ml was used for conversion from ug/L to mg/kg					
Associated samples: 135-1BJ(17.3-18.3) and 135-1BK(18.3-18.8					

Laboratory Duplicate Results

The laboratory duplicate (LD) analyses of sample 135-1BI_16.0-17.0 not meet the RPD QC criteria of less than 20%; however, both sample and duplicate results were <5x SQL. The absolute difference was only slightly greater than the RL, and precision was deemed acceptable based on professional judgement.

The RPD for selenium in LD sample 135-1BJ_17.3-18.3_816122 was not calculable due to a nondetected result in the parent sample. The detected amount in the duplicate sample was less than 5 times the RL; therefore, no action was necessary.

Matrix Spike Results

Samples 135-1BI_16.0-17.0 and 135-1BJ_17.3-18.3 were analyzed as the matrix spikes (MS) in this SDG. In sample 135-1BI_16.0-17.0 the MS %R for antimony (30%) was below the QC limits (75-125%); therefore all soil antimony results were qualified as estimated (J/UJ) and may have a low bias. In sample 135-1BJ_17.3-18.3_816122 the MS %R for antimony (26.6%), magnesium (59.6%), manganese (44.6%), potassium (61.5%), and zinc (71.4) was below the QC limits (75-125%). Therefore all soil antimony, magnesium, manganese, potassium, and zinc results were qualified as estimated (J/UJ) and may have a low bias.

Several additional analytes were outside the QC limits in each spiked sample; however, the amount of the analyte in the spiked sample was greater than four times the amount spiked. Therefore, no qualification was applied due to low spike amounts.

Field Duplicate Results

Sample set 135-1BH_14.0-15.0_815729/ 135-1BHD_14.0-15.0_815730 was the field duplicate (FD) pair associated with the samples in this SDG. All analytes met the FD QC criteria of RPD < 50% (only applicable if both results are >10x SQL) or ±8x SQL if sample and duplicate are <10x SQL.

Percent Solids

The percent solids content for samples 135-1BI_16.0-17.0 (41.3%) and 135-1BJ_17.3-18.3 (47.6%)fell below the acceptable limit of 50%; therefore, the results were qualified (J/UJ) as estimated.

Sample Quantitation Limits

It should be noted that the reporting limits for the nondetect metal results were not adjusted for the initial digestion weight due to software limitations. No validation actions were taken other than to note this discrepancy.

The vast majority samples were analyzed at 2X dilution.

Data Quality and Recommendations

In general, these data appear to be valid and may be used for decision-making purposes. No data were rejected. All metals results were accepted with minor qualifications. Issues noted for this sample set:

- Several metals results were qualified as estimated for MS recovery and may have a low bias.
- Several results were qualified as estimated due to low percent solids.

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Memorandum

Date: June 5, 2007

To: Robert Falotico/Westford

From: Lisa Krowitz/Westford

Subject: Data Validation
PPG Site 137/135/133
March 2007 Soil Sampling
Severn Trent Laboratories
Submission #E267

Distribution: D. Simmons/Westford

05510-109-0447

PP216Cr6lkk

A full data validation was performed by Lisa Krowitz of ENSR on the following soil samples and field blank samples collected on March 22 and 23, 2007 for hexavalent chromium analysis at the PPG Site 137/135/133 – Jersey City, NJ.

Samples	
135-IBE(5.2-5.7)	135-IBI(16.0-17.0) (Matrix spike/Laboratory duplicate)
135-IBF(9.0-9.4)	135-IBJ(17.3-18.3) (Matrix spike/Laboratory duplicate)
135-IBG(13.0-13.5)	135-IBK(18.3-18.8)
135-IBH(14.0-15.0)	F032207 (Field Blank)
135-IBHD(14.0-15.0) [Field Duplicate of 135-IBH(14.0-15.0)]	F03237 (Field Blank)

The samples were submitted to Severn Trent Laboratories (STL) in Edison, New Jersey, for analysis on March 22 and 23, 2007. STL processed and reported these samples under submission #E267. The samples were analyzed for hexavalent chromium (Cr+6) according to SW-846 Methods 3060A and 7196A. The sample results were assessed according to the New Jersey Department of Environmental Protection Standard Operating Procedures (SOPs) Revision No. 2, SOP No. 5.A.10, August 2005, "*Standard Operating Procedure (SOP) for Analytical Data Validation of Hexavalent Chromium*."

General Comments

Issues noted during validation are discussed below. No data results were rejected. Minor qualification of the data was required.

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Data Completeness

All soil sample IDs were truncated and the "135-"prefix listed on the chain-of-custody (COC) was dropped by STL on all the laboratory summary forms due to software limitations. In addition, the parenthesis around the soil depths was replaced with an underscore sign. The "135-" prefix and the parenthesis were manually added by the validator in this validation memorandum, on the sample result forms, and on the supporting worksheets. In addition, the prefix and parenthesis were retained in the project database for consistency with the COC.

Holding Times and Sample Preservation

The cooler temperatures upon sample receipt were 1˚C and 6˚C. Even though one cooler had a temperature slightly below the QC acceptance limit of 4+ 2˚C, no data validation actions were taken on this slight nonconformance.

Matrix Spike (MS) and Post Digestion Spike (PDS) Results

Aqueous MS and PDS analyses were not performed on a sample from this data set. Although this practice is acceptable, the results of the aqueous MS and PDS analyses were not used to evaluate data in this sample set because of possible difference in sample type.

Soil samples 135-IBI(16.0-17.0) and 135-IBJ(17.3-18.3) were selected for MS and PDS analysis in association with the soil samples in this data set.

The MS and PDS analyses of sample 135-IBI(16.0-17.0) did not meet the criteria in the original analysis; therefore, the laboratory re-digested/re-analyzed all the associated soil samples and QC samples in preparation batch #4365. A summary of sample results and associated quality control data for both sets of analyses is provided in the table below for sample 135-IBI(16.0-17.0).

Parameter	Initial Analysis (Extracted 4/3/07)	Re-Analysis (Extracted 4/12/07)
Hexavalent Chromium 135-IBI(16.0-17.0)	4.84 U mg/Kg	4.84 U mg/Kg
Hexavalent Chromium Laboratory Blank	2 U mg/Kg	2 U mg/Kg
Hexavalent Chromium Soluble Matrix Spike	0% Recovery	0% Recovery
Hexavalent Chromium Insoluble Matrix Spike	31.9% Recovery	24.5% Recovery
Hexavalent Chromium Post-Verification Spike	0% Recovery	0% Recovery
Hexavalent Chromium LCS Soluble	within QC limits	Within QC limits
Hexavalent Chromium LCS Insoluble	within QC limits	Within QC limits
Associated samples: 135-IBE(5.2-5.7), 135-IBF (9.0-9.4), 135-IBG(13.0-13.5), 135-1BH(14.0-15.0), 135-1BHD(14.0-15.0), 135-1BI(16.0-17.0)		

U – analyte was not detected

The soluble and insoluble MS and PDS %Rs did not meet QC acceptance criteria in the initial digestion/analysis or in the re-digestion/re-analysis. The original analysis results for the soil samples in preparation batch #4365 [135-IBE(5.2-5.7), 135-IBF,(9.0-9.4), 135-IBG(13.0-13.5), 135-1BH(14.0-15.0), 135-1BHD(14.0-15.0), and 135-1BI(16.0-17.0)] were reported since the soluble and insoluble MS/PDS recoveries were not improved in the re-digestion/re-analysis.

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The MS and PDS analyses of sample 135-IBJ(17.3-18.3) did not meet the criteria in the original analysis; therefore, the laboratory re-digested/re-analyzed all the associated soil samples and QC samples in preparation batch #4372. A summary of sample results and associated quality control data for both sets of analyses is provided in the table below for sample 135-IBJ(17.3-18.3).

Parameter	Initial Analysis (Extracted 4/5/07)	Re-Analysis (Extracted 4/11/07)
Hexavalent Chromium 135-IBJ(17.3-18.3)	4.2 U mg/Kg	4.2 U mg/Kg
Hexavalent Chromium Laboratory Blank	2 U mg/Kg	2 U mg/Kg
Hexavalent Chromium Soluble Matrix Spike	0% Recovery	0% Recovery
Hexavalent Chromium Insoluble Matrix Spike	14.1% Recovery	58.4% Recovery
Hexavalent Chromium Post-Verification Spike	0% Recovery	0% Recovery
Hexavalent Chromium LCS Soluble	Within QC limits	Within QC limits
Hexavalent Chromium LCS Insoluble	Within QC limits	Within QC limits
Associated samples: 135-IBJ(17.3-18.3), 135-IBK(18.3-18.8)		

U – analyte was not detected

The soluble and insoluble MS and PDS %Rs did not meet QC acceptance criteria in the initial digestion/analysis or in the re-digestion/re-analysis. The re-analysis/re-digestion results for the soil samples in preparation batch #4372 [135-IBJ(17.3-18.3) and 135-IBK(18.3-18.8)] were reported since the insoluble MS recovery was improved (>50%) in the re-digestion/re-analysis.

Qualifications based on the MS and PDS recoveries apply to all samples of the same matrix and same reducing or oxidizing nature (based on sample Eh and pH information).

Both MS/PDS sample matrices appear to be of a reducing nature and thus do not support hexavalent chromium. In addition, soil samples 135-1BI(16.0-17.0), 135-IBJ(17.3-18.3), and 135-IBK(18.3-18.8) also appear to be of a reducing nature. Therefore, the nondetect results in these samples were qualified as estimated (UJ) because the soluble and insoluble MS recoveries were <75%R and the PDS %Rs were 0%. These results are usable as estimated quantitation limits that may be biased low.

Samples 135-IBE(5.2-5.7), 135-IBF(9.0-9.4), 135-IBG(13.0-13.5), 135-1BH(14.0-15.0), and 135-1BHD(14.0-15.0) appear to be of an oxidizing nature. The validator chose to qualify the nondetect hexavalent chromium results in these samples as estimated (UJ) rather than rejected (R). Both MS/PDS samples appear to be of a different nature (reducing rather than oxidizing) then these samples, and thus may not be applicable. These results are usable as estimated quantitation limits that may be biased low.

Sample Quantitation Limits

It should be noted that the reporting limits for the nondetect hexavalent chromium results were not adjusted for the initial digestion weight due to laboratory software limitations. No validation actions were taken other than to note this discrepancy.

Data Quality and Recommendations

In general, these data appear to be valid and may be used for decision-making purposes. The hexavalent chromium results were accepted with minor qualifications for low MS and PDS recoveries.

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Memorandum

Date: July 1, 2007

To: Robert Falotico/Westford

From: Deb Truini/Westford

Subject: Data Validation
PPG Site 137/135/133
Jersey City, New Jersey
December 2006 Soil Sampling
Accutest Laboratories
Submission # J48979

Distribution: D. Simmons/Westford

05510-109-0447

PP168Cr6dat.doc

A full data validation was performed by Deb Truini of ENSR on the following soil and field blank samples collected on December 12, 2006 for hexavalent chromium analysis (plus one samples was extracted for Toxicity Characteristic Leaching Procedure (TCLP) chromium) at the PPG Site 137/135/133 – Jersey City, NJ.

Samples	
12-12-06 FB (Field blank)	135-B13A (0.0-0.5)
135-B14A (0.8-1.3) (Matrix spike/Laboratory duplicate for total chromium)	135-B13B (1.0-1.5)
135-B14B (2.9-3.4)	135-B13C (3.7-4.1)
135-B14C (3.4-3.8)	135-B13D (4.8-5.3)
135-B4A (0.7-1.6)	135-B15A (0.6-1.1)
135-B4C (4.0-4.5)	135-B15B (2.2-2.2)
135-B12A (0.7-1.2)	135-B15C (4.2-4.5)
135-B12B (1.5-2.0)	*PPG-114 WC 6 (Matrix spike/ Laboratory duplicate for TCLP chromium)
135-B12C (2.9-3.4)	135-B4B (2.1-2.6)
135-B12D (3.7-4.2)	135-B4B (2.1-2.6) DUP [Field duplicate of 135-B4B (2.1-2.6) DUP]
135-B12E (4.5-5.0)	

*Total chromium and TCLP chromium were performed on this sample.

The samples were submitted to Accutest Laboratories (Accutest) in Dayton, New Jersey for analysis on December 12, 2006. Accutest processed and reported these samples under submission number J48979. The TCLP sample was extracted according to SW-846 Method 1311 and all samples were digested and/or analyzed for hexavalent chromium (Cr+6) according to SW-846 Methods 3060A and 7196A. The sample results were assessed according to the New Jersey Department of Environmental Protection Standard Operating Procedures (SOPs) Revision No. 2, SOP No. 5.A.10, August 2005, "*Standard Operating Procedure (SOP) for Analytical Data Validation of Hexavalent Chromium*."

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General Comments

Issues noted during validation are discussed below. No data results were rejected. Minor qualification of the data was required.

Data Completeness

Soil sample 135-B14D (4.6-5.0) was received broken at the laboratory and therefore, there was not enough sample for hexavalent chromium analysis.

Matrix Spike Results

Samples 135-B14A (0.8-1.3) and PPG-114-14BA (1.2-1.7) were selected for matrix spike (MS) analysis for hexavalent chromium analysis in association with this data set. Sample PPG-114-14BA (1.2-1.7) was reported in Accutest #J49387.

The soluble MS recovery criteria for sample 135-B14A (0.8-1.3) was not met in the original analysis; therefore, the laboratory re-digested/re-analyzed all associated soil samples and QC samples in preparation batch #GP37180. A summary of sample results and associated quality control data for both sets of analyses is provided in the table below for sample 135-B14A (0.8-1.3).

Parameter	Initial Analysis (Extracted 1/7/07)	Re-Analysis (Extracted 1/9/07)
Hexavalent Chromium 135-B14A (0.8-1.3)	6.2 mg/Kg	14.6 mg/Kg
Hexavalent Chromium 135-B14A (0.8-1.3) DUP	2.2 mg/Kg	1.5 mg/Kg
Hexavalent Chromium Laboratory Blank	< 1 mg/Kg	< 1 mg/Kg
Hexavalent Chromium Soluble Matrix Spike	1.8% Recovery	43.0% Recovery
Hexavalent Chromium Insoluble Matrix Spike	90.2% Recovery	111.6% Recovery
Hexavalent Chromium Post-Verification Spike	77.2% Recovery	1015% Recovery
Hexavalent Chromium LCS Soluble	95% Recovery	94.8% Recovery
Hexavalent Chromium LCS Insoluble	102% Recovery	115.7% Recovery
Associated samples: all soil samples		

The soluble matrix spike %R listed in the table above did not meet QC acceptance criteria in the initial digestion and analysis or in the re-digestion and re-analysis. However the post-digestion spike (PDS) recovery showed improvement in the re-digestion/re-analysis results. Therefore, the sample results from the re-digestion/re-analysis of preparation batch #GP37180 (all soils except PPG-114 WC 6) were reported.

Qualifications based on the MS recoveries apply to all samples of the same matrix in this data set. Therefore, the positive and nondetect hexavalent chromium results in all soil samples in this data set were qualified as estimated (J and UJ, respectively) since the soluble MS recovery for sample 135-B14A (0.8-1.3) was <50 %R, and the MS sample matrix was determined to be of a reducing nature (see the supporting worksheets for Eh and pH results for all soil samples). Note that samples 135-B14C (3.4-3.8), 135-B4A (0.7-1.6), 135-B12A (0.7-1.2), 135-B12B (1.5-2.0), 135-B12D (3.7-4.2), 135-B13B (1.0-1.5), 135-B13C (3.7-4.1), 135-B13D (4.8-5.3), 135-B15A (0.6-1.1), and PPG-114 WC 6 appear to be slightly oxidizing. The validator chose to qualify these results as estimated (J and UJ) rather than qualifying the results as rejected (R) since the MS sample appears to be of a different nature and may not be applicable. These results are usable as estimated values and quantitation limits that may be biased low.

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The soluble MS recovery criteria for sample PPG-114-14BA (1.2-1.7) was not met in the original analysis; therefore, the laboratory re-digested/re-analyzed all associated soil samples and QC samples in preparation batch #GP37232. A summary of sample results and associated quality control data for both sets of analyses is provided in the table below for sample PPG-114-14BA (1.2-1.7).

Parameter	Initial Analysis (Extracted 1/10/07)	Re-Analysis (Extracted 1/11/07)
Hexavalent Chromium PPG-114-14BA (1.2-1.7)	3.3 mg/Kg	1.5 mg/Kg
Hexavalent Chromium PPG-114-14BA (1.2-1.7) DUP	3.5 mg/Kg	2.6 mg/Kg
Hexavalent Chromium Laboratory Blank	< 1 mg/Kg	<1 mg/Kg
Hexavalent Chromium Soluble Matrix Spike	56.3% Recovery	54.0% Recovery
Hexavalent Chromium Insoluble Matrix Spike	100.3% Recovery	97.6% Recovery
Hexavalent Chromium Post-Verification Spike	111% Recovery	100% Recovery
Hexavalent Chromium LCS Soluble	88.8% Recovery	95% Recovery
Hexavalent Chromium LCS Insoluble	100.6% Recovery	104% Recovery
Associated samples: all soil samples, with the exception of sample 135-B14A (0.8-1.3)		

The soluble matrix spike %R listed in the table above did not meet QC acceptance criteria in the initial digestion and analysis. Since there was no improvement in the MS recovery, the original analysis results for soil samples digested in preparation batch #GP37232 [soil sample PPG-114 WC 6] were reported.

Qualifications based on the MS recoveries apply to all samples of the same matrix in this data set. Therefore, the positive and nondetect hexavalent chromium results for all soil samples, with the exception of sample 135-B14A (0.8-1.3), were qualified as estimated (J and UJ) since the soluble MS recovery for sample PPG-114-14BA (1.2-1.7) was <75 %R but >50%. These results are usable as estimated values and quantitation limits that may be biased low.

Post Digestion Spike (PDS) Results

Samples 135-B14A (0.8-1.3) and PPG-114-14BA (1.2-1.7) were selected for PDS analysis for hexavalent chromium analysis in association with the soil samples in this data set. Sample PPG-114-14BA (1.2-1.7) was reported in Accutest #J49387. The PDS recoveries met criteria in the re-digestion/re-analysis of sample 135-B14A (0.8-1.3) and in the initial digestion/analysis and re-digestion/re-analysis of sample PPG-114-14BA (1.2-1.7).

No validation actions were required due to the failed hexavalent chromium PDS recoveries associated with the original digestion and analysis of sample 135-B14A (0.8-1.3) since the hexavalent chromium results were reported from the re-digestion and re-analysis.

A PDS was performed on field blank sample 12-12-06 FB. Recovery criteria was met for this PDS . No validation actions were required.

Sample PPG-114 WC 6 was selected for PDS analysis for TCLP hexavalent chromium analysis in association with the TCLP sample in this data set. The PDS recoveries met recovery criteria in the re-digestion/re-analysis of sample PPG-114 WC 6. No validation actions were required due to the failed hexavalent chromium PDS recoveries associated with the original digestion and analysis of sample PPG-114 WC 6 since the hexavalent chromium results were reported from the re-digestion and re-analysis.

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Laboratory Duplicate Results

Laboratory duplicate analyses were performed on samples 135-B14A (0.8-1.3) and PPG-114-14BA (1.2-1.7) for hexavalent chromium in association with the soil samples in this data set. Sample PPG-114-14BA (1.2-1.7) was reported in Accutest #J49387. Sample PPG-114-14BA (1.2-1.7) met relative percent difference (RPD) criteria in both the original digestion/analysis and the re-digestiojn/re-analysis. No validation actions were required due to the failed hexavalent chromium RPD exceedance associated with the original digestion and analysis of sample 135-B14A (0.8-1.3) since the hexavalent chromium results were reported from the re-digestion and re-analysis. The following table summarizes the analytes that exceeded the RPD criteria in the re-digestion and re-analysis of laboratory duplicate sample 135-B14A (0.8-1.3).

Analyte	RPD %
Hexavalent chromium	162.7
Associated samples: all soil samples	

Criteria: RPD < 20% (only applicable if both results are 5x sample quantitation limit (SQL))
± 2 mg/Kg if sample and duplicate are < 8 mg/Kg

The positive and nondetect hexavalent chromium results in all soil samples were qualified as estimated (J and UJ, respectively). These results are usable for project decisions as estimated values and quantitation limits.

Laboratory duplicate analysis was performed on field blank sample 12-12-06 FB. Hexavalent chromium was nondetect in both the original and laboratory duplicate sample. Precision was deemed acceptable.

Laboratory duplicate analysis was performed on TCLP sample PPG-114 WC 6. This sample met RPD criteria in both the original analysis and re-analysis. Precision was deemed acceptable.

Field Duplicate Results

The following table indicates the field duplicate samples and the associated Accutest submission number.

Sample IDs	Accutest Submission Number
135-B4B (2.1-2.6) and 135-B4B (2.1-2.6) DUP	J48979

The following table summarizes the hexavalent chromium results and the RPD criteria in field duplicate pair 135-B4B (2.1-2.6) and 135-B4B (2.1-2.6) DUP for the re-digestion and re-analysis.

Analyte	135-B4B (2.1-2.6) (mg/Kg)	135-B4B (2.1-2.6) DUP (mg/Kg)	RPD (%)
Hexavalent chromium	12.1	16.1	28.0

Criteria: RPD < 50% [only applicable if both results are >10x sample quantitation limit (SQL)]
±8x SQL if sample and duplicate are <10x SQL

No validation actions were required since field duplicate RPD criteria was met and precision was deemed acceptable.

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Sample Quantitation Limits

Several soil and TCLP samples were analyzed at dilutions due to high concentrations of hexavalent chromium present in these samples (see the supporting worksheets for a discussion on the samples requiring dilution).

Data Quality and Recommendations

In general, these data appear to be valid and may be used for decision-making purposes. The hexavalent chromium results were accepted with minor qualifications for low MS recoveries (with evidence of reducing matrix) and the laboratory duplicate RPD exceedance in all soil samples.

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Memorandum

Date: June 30, 2007

To: Robert Falotico/Westford

From: Deb Truini/Westford

Subject: Data Validation
PPG Site 137/135/133
December 2006 Soil Sampling
Accutest Laboratories
Submission # J48979

Distribution: D. Simmons/Westford 05510-109-0447

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A limited data validation was performed by Deb Truini of ENSR on the following soil samples and aqueous samples collected on December 12, 2006 for Target Analyte List (TAL) metals (or a subset) analysis and Toxicity Characteristic Leaching Procedure (TCLP) metals at the PPG Site 137/135/133 – Jersey City, NJ.

Samples	
12-12-06 FB (Field blank)	135-B12E (4.5-5.0)
135-B14A (0.8-1.3)	135-B13A (0.0-0.5)
135-B14B (2.9-3.4)	135-B13B (1.0-1.5)
135-B14C (3.4-3.8) (Matrix spike/Matrix spike duplicate for total metals)	135-B13C (3.7-4.1)
135-B14D (4.6-5.0)	135-B13D (4.8-5.3)
135-B4A (0.7-1.2)	135-B15A (0.6-1.1)
135-B4C (4.0-4.5)	135-B15B (2.2-2.2)
135-B12A (0.7-1.2)	135-B15C (4.2-4.5)
135-B12B (1.5-2.0)	*PPG-114-WC 6 (Matrix spike/Matrix spike duplicate for TCLP metals)
135-B12C (2.9-3.4)	135-B4B (2.1-2.6)
135-B12D (3.7-4.2)	135-B4B (2.1-2.6) DUP [Field duplicate of 135-B4B (2.1-2.6) DUP]

*Total arsenic, chromium, lead, and mercury plus TCLP metals were performed on this sample.

The samples were submitted to Accutest Laboratories (Accutest) in Dayton, New Jersey for analysis on December 12, 2006. Accutest processed and reported these samples under submission number J48979. The TCLP metals were extracted using SW-846 Method 1311 and the metals analyses were performed using SW-846 Methods 6010B, 7470A, and 7471A. The sample results were assessed according to the New Jersey Department of Environmental Protection Standard Operating Procedures (SOPs) Revision No. 1, SOP No. 5.A.16, May, 2002. "*Quality Assurance Data Validation of Analytical Deliverables for Inorganics (based on USEPA SW-846 Methods)*." This SOP was modified to accommodate SW-846 methods and to address situations not described in the SOP. The review was

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based on summary information provided on holding times, blanks, matrix spikes, laboratory duplicates, field duplicates, and laboratory control samples (LCS).

General Comments

Issues noted during validation are discussed below. No data results were rejected. Minor qualification of the data was required.

Data Completeness

Soil sample 135-B14D (4.6-5.0) was received broken at the laboratory and therefore, there was not enough sample for percent solids or mercury analysis. All remaining metal results were reported in wet weight.

Matrix Spike Results

Sample 135-B14C (3.4-3.8) was selected for matrix spike (MS) and matrix spike duplicate (MSD) analysis for all metals and sample 135-B16B (2.0-2.4) was selected for MS and MSD analysis for all metals, except mercury, in association with the soil samples in this data set. Sample 135-B16B (2.0-2.4) was reported in Accutest #J49116. Sample PPG-114-WC 6 was selected for MS and MSD analysis for TCLP metals. Sample PPG-114-WC 6 met percent recoveries (%Rs) for all metals. The following MS and MSD %Rs listed in the table below did not meet the QC acceptance criteria in sample 135-B14C (3.4-3.8).

Analyte	MS %R	MSD %R
Antimony	57.9	55.7
Calcium	Ok	139.1
Copper	Ok	73.7
Manganese	138.1	140.9
Mercury	Ok	62.0
Zinc	174.3	Ok
QC Limits (%)	**75-125**	**75-125**
Associated samples: all soil samples		

The positive and nondetect antimony, copper, and mercury results in all soil samples were qualified as estimated (J and UJ, respectively) due to <75% MS and/or MSD recoveries. All these results are usable for project decisions as estimated values and quantitation limits that may be biased low.

The positive calcium, manganese, and zinc results in all soil samples were qualified as estimated (J) due to >125% MS and/or MSD recoveries. These results are usable for project decisions as estimated values that may be biased high.

The following MS and MSD %Rs listed in the table below did not meet the QC acceptance criteria in sample 135-B16B (2.0-2.4).

Analyte	MS %R	MSD %R
Antimony	48.2	49.3
Barium	74.6	Ok
Calcium	192.0	Ok
Iron	151.1	Ok
Associated samples: all soil samples, with the exception of sample 135-B14C (3.4-3.8)		

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The positive and nondetect antimony and barium results in all soil samples, with the exception of sample 135-B14C (3.4-3.8), were qualified as estimated (J and UJ, respectively) due to <75% MS and/or MSD recoveries. All these results are usable for project decisions as estimated values and quantitation limits that may be biased low.

The positive calcium and iron results in all soil samples, with the exception of sample 135-B14C (3.4-3.8), were qualified as estimated (J) due to >125% MS recoveries. These results are usable for project decisions as estimated values that may be biased high.

Two aqueous non-PPG samples were selected for the MS and MSD analysis for all metals in association with field blank sample 12-12-06 FB and two soil non-PPG samples were selected for mercury MS and MSD analysis in association with several soil samples. No validation actions were applied for MS and MSD %R exceedances in the non-PPG sample due to potential differences in the sample matrix.

Laboratory Duplicate Results

The laboratory performed duplicate analysis on the matrix spike for all metals in order to evaluate duplicate precision. Matrix spike/matrix spike duplicate (MS/MSD) analyses were performed on soil sample 135-B14C (3.4-3.8) for all metals; and on sample 135-B16B (2.0-2.4) for all metals, except mercury, in association with the soil samples in this data set. Sample 135-B16B (2.0-2.4) was reported in Accutest #J49116. Sample PPG-114-WC 6 was selected for MS and MSD analysis for TCLP metals. Samples 135-B14C (3.4-3.8) and PG-114-WC 6 met relative percent difference (RPD) criteria. The following table summarizes the analytes that exceeded the RPD criteria in laboratory duplicate sample 135-B16B (2.0-2.4).

Analyte	RPD (%)
Copper	26.3
Manganese	32.2
Zinc	26.5
Associated samples: all soil samples, with the exception of sample 135-B14C (3.4-3.8)	

Criteria: RPD < 20% (only applicable if both results are >5x sample quantitation limit (SQL))
± SQL if sample and duplicate are <5x SQL

The positive copper, manganese, and zinc results in all soil samples, with the exception of sample 135-B14C (3.4-3.8), were qualified as estimated (J). These results are usable for project decisions as estimated values.

Two aqueous non-PPG samples were selected for the MS and MSD analysis for all metals in association with field blank sample 12-12-06 FB and two soil non-PPG samples were selected for mercury MS and MSD analysis in association with several soil samples. No validation actions were applied for MS and MSD RPD exceedances in the non-PPG sample due to potential differences in the sample matrix.

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Field Duplicate Results

The following table indicates the field duplicate samples and the associated Accutest submission number.

Sample IDs	Accutest Submission Number
135-B4B (2.1-2.6) and 135-B4B (2.1-2.6)DUP	J48979

The following table summarizes the detected analytes that did not meet the RPD criteria of 30% in field duplicate pair 135-B4B (2.1-2.6) and 135-B4B (2.1-2.6)DUP. The RPDs for antimony, beryllium, and silver were not calculable (NC) since these results were nondetect in the original sample. Precision for antimony, beryllium, and silver were acceptable since the field duplicate results were <10x the sample quantitation limits (SQLs). The RPD for magnesium was >50%, however, precision was acceptable for this analyte since the original and field duplicate results were <10x the SQL and the absolute difference between the results was <8x the SQLs.

Analyte	135-B4B (2.1-2.6) (mg/Kg)	135-B4B (2.1-2.6)DUP (mg/Kg)	RPD (%)
Antimony	2.8 U	4.3	NC
Beryllium	0.70 U	0.75	NC
Copper	11100	521	182.1
Magnesium	962	1660	53.2
Silver	1.4 U	1.4	NC
Zinc	349	723	69.8

Criteria: RPD < 50% (only applicable if both results are >10x sample quantitation limit (SQL))
±8x SQL if sample and duplicate are <10x SQL

The positive copper and zinc results in all soil samples were qualified as estimated (J). These copper and zinc results are usable as estimated values.

Sample Quantitation Limits

Several of the positive and nondetect results for the soil and TCLP samples were analyzed at dilutions due to either high concentrations (exceedance of the instrument linear range) of these analytes present in the undiluted analysis resulting in potential detector saturation or high concentrations of an interfering analyte present in the undiluted analysis, which affects the accuracy of the spectral interference correction attributable to the interference. See the supporting worksheets for a discussion on the samples requiring dilution. No data validation actions were taken other than this notation.

Data Quality and Recommendations

In general, these data appear to be valid and may be used for decision-making purposes. All metals results were accepted with minor qualifications for antimony, barium, copper, and mercury in the majority of the soil samples due to low MS and/or MSD recoveries; for calcium, iron, manganese, and zinc in the majority of the soil samples due to high MS and/or MSD recoveries; for copper, manganese, and zinc in the majority of the soil samples due to laboratory duplicate RPD exceedances; and for copper and zinc in all soil samples due to the field duplicate RPD exceedances.

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Memorandum

Date: April 17, 2007

To: Robert Falotico/Westford

From: Deb Truini/Westford

Subject: Data Validation
PPG Site 137/135/133
Jersey City, New Jersey
December 2006 Soil Sampling
Accutest Laboratories
Submission # J49116

Distribution: D. Simmons/Westford 05510-107-0504

PP169Cr6dat.doc

A full data validation was performed by Deb Truini of ENSR on the following soil and field blank samples collected on December 13, 2006 for hexavalent chromium analysis at the PPG Site 137/135/133 – Jersey City, NJ.

Samples	
12-1306-FB (Field blank)	135-B18A (0.6-1.1)
135-B16A (0.7-1.2)	135-B18B (2.8-3.3)
135-B16B (2.0-2.4) (Matrix spike/Laboratory duplicate)	135-B18C (4.1-4.6)
135-B16C (4.2-4.6)	PPG-1351CA (0.6-1.1)
135-B17A (0.9-1.4)	PPG-1351CB (1.8-2.3)
135-B17B (2.4-2.9)	PPG-1351CB (1.8-2.3) DUP [Field duplicate of PPG-1351CB (1.8-2.3)]
135-B17C (4.0-4.5)	PPG-1351CC (4.5-5.0)
135-B19A (1.3-1.8)	135-B19C (3.3-3.8)
135-B19B (3.3-3.8)	

The samples were submitted to Accutest Laboratories (Accutest) in Dayton, New Jersey for analysis on December 13, 2006. Accutest processed and reported these samples under submission number J49116. The samples were analyzed for hexavalent chromium (Cr+6) according to SW-846 Methods 3060A and 7196A. The sample results were assessed according to the New Jersey Department of Environmental Protection Standard Operating Procedures (SOPs) Revision No. 2, SOP No. 5.A.10, August 2005, "*Standard Operating Procedure (SOP) for Analytical Data Validation of Hexavalent Chromium*."

General Comments

Issues noted during validation are discussed below. No data results were rejected. Minor qualification of the data was required.

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Matrix Spike Results

Sample 135-B16B (2.0-2.4) was selected for matrix spike (MS) analysis for hexavalent chromium analysis in association with this data set. The initial recovery for the soluble and insoluble matrix spikes were outside the control limits of 75-125%. Therefore, all samples associated with these failed MS samples and all required quality control samples were re-digested and re-analyzed for hexavalent chromium as required when matrix spike recovery criteria of 75-125 percent recovery (%R) are not met in the original digestion and analysis. Insoluble and soluble laboratory control sample (LCS) results associated with both the original analysis and re-analysis were within established control limits. A summary of sample results and associated quality control data for both sets of analyses is provided in the table below for sample 135-B16B (2.0-2.4).

Parameter	Initial Analysis (Extracted 1/7/07)	Re-Analysis (Extracted 1/9/07)
Hexavalent Chromium 135-B16B (2.0-2.4)	1.2 U mg/Kg	1.2 U mg/Kg
Hexavalent Chromium 135-B16B (2.0-2.4) DUP	1.2 U mg/Kg	1.2 U mg/Kg
Hexavalent Chromium Laboratory Blank	< 1 mg/Kg	< 1 mg/Kg
Hexavalent Chromium Soluble Matrix Spike	0% Recovery	1.8% Recovery
Hexavalent Chromium Insoluble Matrix Spike	57.7% Recovery	56.9% Recovery
Hexavalent Chromium Post-Verification Spike	82.1% Recovery	58.1% Recovery
Hexavalent Chromium LCS Soluble	93.3% Recovery	97.3% Recovery
Hexavalent Chromium LCS Insoluble	108.2% Recovery	111.8% Recovery
Associated samples: all soil samples		

The soluble and insoluble matrix spike %Rs listed in the table above did not meet QC acceptance criteria in the initial or re-digestion/re-analysis. Therefore, the initial results were reported since there was no improvement in the MS recoveries. The positive and nondetect hexavalent chromium results in all soil samples were qualified as estimated (J and UJ, respectively) since the soluble MS recovery was <50 %R and the insoluble MS recovery was <75% but >50%. In addition, the matrix was determined to be of a reducing nature in these soil samples (see table below). These results are usable as estimated values and quantitation limits that may be biased low.

Sample ID	Eh (mV)	pH (su)
135-B16A (0.7-1.2)	336	7.77
135-B16B (2.0-2.4)	271	7.79
135-B16C (4.2-4.6)	248	7.54
135-B17A (0.9-1.4)	287	8.09
135-B17B (2.4-2.9)	265	7.93
135-B17C (4.0-4.5)	242	6.34
135-B19A (1.3-1.8)	191	9.36
135-B19B (3.3-3.8)	272	7.61
135-B18A (0.6-1.1)	255	8.02
135-B18B (2.8-3.3)	269	7.18
135-B18C (4.1-4.6)	279	7.01
PPG-1351CA (0.6-1.1)	401	6.3
PPG-1351CB (1.8-2.3)	399	7.26
PPG-1351CB (1.8-2.3) DUP	398	7.3
PPG-1351CC (4.5-5.0)	387	7.47
135-B19C (3.3-3.8)	371	5.91

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Post Digestion Spike (PDS) Results

Sample 135-B16B (2.0-2.4) was selected for post digestion spike (PDS) analysis for hexavalent chromium analysis in association with the soil samples in this data set. The re-analysis and re-digestion did not meet PDS or PDS (pH adjusted) recovery criteria. However, no actions were taken since the results were reported from the initial analysis and digestion. The following PDS percent recoveries listed in the table below did not meet the QC acceptance criteria in the initial digestion and analysis of sample 135-B16B (2.0-2.4).

Analyte	PDS %R
Hexavalent chromium (initial analysis)	82.1
Hexavalent chromium (initial analysis – pH adjusted)	76.0
QC Limits (%)	**85-115**

The positive and nondetect hexavalent chromium results in all soil samples were qualified as estimated (J and UJ, respectively). These results are usable as estimated values and quantitation limits that may be biased low.

A PDS was performed on field blank sample 12-1306-FB. Recovery criteria was met for this PDS . No validation actions were required.

Field Duplicate Results

The following table indicates the field duplicate samples and the associated Accutest submission number.

Sample IDs	Accutest Submission Number
PPG-1351CB (1.8-2.3) and PPG-1351CB (1.8-2.3) DUP	J49116

The following table summarizes the hexavalent chromium results and the relative percent difference (RPD) criteria in field duplicate pair PPG-1351CB (1.8-2.3) and PPG-1351CB (1.8-2.3) DUP.

Analyte	PPG-1351CB (1.8-2.3) (mg/Kg)	PPG-1351CB (1.8-2.3) DUP (mg/Kg)	RPD (%)
Hexavalent chromium	12.6	20.1	46.0

Criteria: RPD < 50% [only applicable if both results are >10x sample quantitation limit (SQL)]
±8x SQL if sample and duplicate are <10x SQL

No validation actions were required since field duplicate RPD criteria was met and precision was deemed acceptable.

Data Quality and Recommendations

In general, these data appear to be valid and may be used for decision-making purposes. The hexavalent chromium results were accepted with minor qualifications for low MS and PDS recoveries in all soil samples.

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Memorandum

Date: April 17, 2007

To: Robert Falotico/Westford

From: Deb Truini/Westford

Subject: Data Validation
PPG Site 137/135/133
Jersey City, New Jersey
December 2006 Soil Sampling
Accutest Laboratories
Submission # J49116

Distribution: D. Simmons/Westford 05510-107-0504

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A limited data validation was performed by Deb Truini of ENSR on the following soil and field blank samples collected on December 13, 2006 for Target Analyte List (TAL) metals analysis at the PPG Site 137/135/133 – Jersey City, NJ.

Samples	
12-1306-FB (Field blank)	135-B18A (0.6-1.1)
135-B16A (0.7-1.2)	135-B18B (2.8-3.3)
135-B16B (2.0-2.4) (Matrix spike/Matrix spike duplicate)	135-B18C (4.1-4.6)
135-B16C (4.2-4.6)	PPG-1351CA (0.6-1.1)
135-B17A (0.9-1.4)	PPG-1351CB (1.8-2.3)
135-B17B (2.4-2.9)	PPG-1351CB (1.8-2.3) DUP [Field duplicate of PPG-1351CB (1.8-2.3)]
135-B17C (4.0-4.5)	PPG-1351CC (4.5-5.0)
135-B19A (1.3-1.8)	135-B19C (3.3-3.8)
135-B19B (3.3-3.8)	

The samples were submitted to Accutest Laboratories (Accutest) in Dayton, New Jersey for analysis on December 13, 2006. Accutest processed and reported these samples under submission number J49116. Metals analyses were performed using SW-846 Methods 6010B, 7470A, and 7471A. The sample results were assessed according to the New Jersey Department of Environmental Protection Standard Operating Procedures (SOPs) Revision No. 1, SOP No. 5.A.16, May, 2002. "*Quality Assurance Data Validation of Analytical Deliverables for Inorganics (based on USEPA SW-846 Methods)*." This SOP was modified to accommodate SW-846 methods and to address situations not described in the SOP. The review was based on summary information provided on holding times, blanks, matrix spikes, laboratory duplicates, field duplicates, and laboratory control samples (LCS).

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General Comments

Issues noted during validation are discussed below. No data results were rejected. Minor qualification of the data was required.

Blank Results

The following table indicates the field blank sample and the associated Accutest submission number.

Sample IDs	Accutest Submission Number
12-1306-FB	J49116

Blank contaminants were not detected in field blank sample 12-1306-FB which was associated with all soil samples in this data set.

Blank contaminants were not detected in the laboratory instrument blanks which were associated with all soil samples. Blank contaminants were detected in the laboratory instrument blank associated with the field blank sample 12-1306-FB for lead, chromium, antimony, and iron. No validation actions were required for lead, chromium, antimony, and iron since there were no reported lead, chromium, antimony, and iron sample results bracketed by these failed instrument blanks.

Matrix Spike Results

Sample 135-B16B (2.0-2.5) was selected for matrix spike (MS) and matrix spike duplicate (MSD) analysis for all metals in association with the soil samples in this data set. The following MS and MSD percent recoveries (%Rs) listed in the table below did not meet the QC acceptance criteria in sample 135-B16B (2.0-2.5).

Analyte	MS %R	MSD %R
Antimony	48.2	49.3
Calcium	192.0	136.4
Iron	151.1	Ok
QC Limits (%)	**75-125**	**75-125**
Associated samples: all soil samples		

The positive and nondetect antimony results in all soil samples were qualified as estimated (J and UJ, respectively) due to <75% MS and MSD recoveries. These results are usable for project decisions as estimated values and quantitation limits that may be biased low.

The positive results for calcium and iron in all soil samples were qualified as estimated (J) due to >125% MS and/or MSD recoveries. These results are usable for project decisions as estimated values that may be biased high.

One aqueous non-PPG sample was selected for MS and MSD analysis in association with field blank sample 12-1306-FB. No validation actions were applied for MS and MSD recovery exceedances in the non-PPG sample due to potential differences in the sample matrix.

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Laboratory Duplicate Results

The laboratory performed duplicate analysis on the matrix spike for all metals in order to evaluate duplicate precision. Matrix spike/matrix spike duplicate (MS/MSD) analyses were performed on soil sample 135-B16B (2.0-2.5) for all metals in association with the soil samples in this data set. The following table summarizes the analytes that exceeded the relative percent difference (RPD) criteria in laboratory duplicate sample 135-B16B (2.0-2.5).

Analyte	RPD (%)
Copper	26.3
Manganese	32.2
Zinc	26.5
Associated samples: all soil samples	

Criteria: RPD < 20% (only applicable if both results are >5x sample quantitation limit (SQL))
± SQL if sample and duplicate are <5x SQL

The positive copper, manganese, and zinc results in all soil samples were qualified as estimated (J). These results are usable for project decisions as estimated values.

One aqueous non-PPG sample was selected for the MS and MSD analysis in association with field blank sample 12-1306-FB. No validation actions were applied for MS and MSD RPD exceedances in the non-PPG sample due to potential differences in the sample matrix.

Field Duplicate Results

The following table indicates the field duplicate samples and the associated Accutest submission number.

Sample IDs	Accutest Submission Number
PPG-1351CB (1.8-2.3) and PPG-1351CB (1.8-2.3) DUP	J49116

The following table summarizes the detected analytes and the RPD criteria in field duplicate pair PPG-1351CB (1.8-2.3) and PPG-1351CB (1.8-2.3) DUP. The RPDs for cobalt and silver were not calculable (NC) since these results were nondetect in the original sample. Precision for cobalt and silver were deemed acceptable since the field duplicate results were <10x the sample quantitation limits (SQLs).

Analyte	PPG-1351CB (1.8-2.3) (mg/Kg)	PPG-1351CB (1.8-2.3) DUP (mg/Kg)	RPD (%)
Aluminum	8240	9400	13.2
Antimony	6.5	6.9	6.0
Arsenic	15.8	17.6	10.8
Barium	873	822	6.0
Cadmium	8.4	6.6	24.0
Calcium	6940	6090	13.0
Chromium	24.9	28.0	11.7
Cobalt	6.5 U	8.4	NC
Copper	1200	1160	3.4
Iron	31900	36300	12.9

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Analyte	PPG-1351CB (1.8-2.3) (mg/Kg)	PPG-1351CB (1.8-2.3) DUP (mg/Kg)	RPD (%)
Lead	1200	1170	2.5
Magnesium	1320	1350	2.2
Manganese	1050	1720	48.4
Mercury	2.0	1.6	22.2
Nickel	20.8	29.2	33.6
Potassium	864	973	11.9
Silver	1.3 U	1.7	NC
Vanadium	26.5	28.6	7.6
Zinc	2910	2740	6.0

Criteria: RPD < 50% (only applicable if both results are >10x sample quantitation limit (SQL))
±8x SQL if sample and duplicate are <10x SQL

No validation actions were required for any of the analytes since field duplicate RPD criteria was met and precision was deemed acceptable.

Sample Quantitation Limits

The following table indicates the positive and nondetect results that were analyzed at dilutions due to either high concentrations (exceedance of the instrument linear range) of these analytes present in the undiluted analysis resulting in potential detector saturation or high concentrations of an interfering analyte present in the undiluted analysis, which affects the accuracy of the spectral interference correction attributable to the interference.

Sample ID	Analyte	Dilution Factor
135-B16A (0.7-1.2)	Manganese, selenium, thallium*	2
	Mercury	5
135-B16B (2.0-2.4)	Mercury	2
135-B16C (4.2-4.6)	Mercury	2
135-B17A (0.9-1.4)	Barium	
135-B19A (1.3-1.8)	Mercury	4
135-B19B (3.3-3.8)	Mercury	4
135-B18A (0.6-1.1)	Mercury	2
PPG-1351CB (1.8-2.3)	Mercury	4
PPG-1351CB (1.8-2.3) DUP	Mercury	2
PPG-1351CC (4.5-5.0)	Mercury	10

*Note that the reporting limit for this nondetect thallium result was further raised by the laboratory due to negative interference as evidenced by a negative value at the 2x dilution.

No data validation actions were taken other than this notation.

Data Quality and Recommendations

In general, these data appear to be valid and may be used for decision-making purposes. All metals results were accepted with minor qualifications for antimony in all soil samples due to low MS and MSD recoveries; for calcium and iron in all soil samples due to high MS and/or MSD recoveries; and for copper, manganese and zinc in all soil samples due to the laboratory duplicate RPD exceedances.

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Data Validation Report

Project:	PPG Garfield Avenue Remedial Action (GARA) - P3C PDI	
Laboratory:	Accutest, Dayton, NJ	
Laboratory Job No.:	JB83043	
Analysis/Method:	Hexavalent Chromium SW846 3060A/7196	
Validation Level:	Full	
Site Location/Address:	PPG Site 135 - Garfield Avenue, Jersey City, NJ	
AECOM Project No:	60314351.GA.DE.PDI.P3	
Prepared by:	Dion Lewis /AECOM	Completed on: 12/19/2014
Reviewed by:	Lisa Krowitz /AECOM	File Name: JB83043_2014-12-19_DV Report-F

Introduction

The data were reviewed in accordance with the FSP-QAPP and the following NJDEP validation Standard Operating Procedure (SOP):

- NJDEP Office of Data Quality SOP 5.A.10, Rev 3 (September 2009), SOP for Analytical Data Validation of Hexavalent Chromium - for USEPA SW-846 Method 3060A, USEPA SW-846 Method 7196A and USEPA SW-846 Method 7199;

The results of quality control data analyzed with site samples were used to assess the overall reliability of the data. The following qualifiers were used to identify data quality issues:

U: Indicates the analyte was not detected in the sample above the sample reporting limit.

J: Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

UJ: Indicates the analyte was not detected above the reporting limit and the reporting limit was approximate.

UB: The analyte concentration is less than or equal to three (3) times the concentration in the associated method/prep blank. The presence of the analyte in the sample is negated (UB)due to laboratory contamination.

JB: The analyte concentration is greater than three (3) times, but less than or equal to ten (10) times the concentration in the associated method/prep blank. The presence of that analyte in the sample is considered "real". The concentration is quantitatively qualified (JB) due to method blank contamination.

R: The sample result was rejected due to serious deficiencies; the presence or absence of the analyte could not be confirmed.

RA: The sample result was rejected but is still considered usable.

Sample Information

The samples listed below were collected by AECOM on December 2, 2014 as part of the PPG Garfield Avenue Remedial Action (GARA) - P3C PDI at PPG Site 135 - Garfield Avenue, Jersey City, NJ. Only the samples and parameters listed below were validated.

Field ID	Laboratory ID	Matrix	Fraction
135-FB20141202 (Equipment Blank)	JB83043-2	Aqueous	Hexavalent Chromium
135-P3C-X35AR-0.4-0.9	JB83043-1	Soil	Hexavalent Chromium
135-P3C-X36AR-0.0-0.5	JB83043-3	Soil	Hexavalent Chromium
135-P3C-X47AR-10.0-10.5	JB83043-5	Soil	Hexavalent Chromium
135-P3C-X47AR-12.0-12.5	JB83043-6	Soil	Hexavalent Chromium
135-P3C-X47AR-16.6-17.1	JB83043-7	Soil	Hexavalent Chromium
135-P3C-X47AR-17.1-17.6	JB83043-8	Soil	Hexavalent Chromium
135-P3C-X47AR-6.5-7.0	JB83043-4	Soil	Hexavalent Chromium

The samples were collected following the procedures detailed in the Work Order for Garfield Avenue Remedial Action (GARA) at PPG Site 135 - Garfield Avenue, Jersey City, NJ and the Field Sampling Plan/Quality Assurance Project Plan for Non-Residential and Residential Chromium Sites Hudson County, New Jersey (December 2011).

General Comments

The data package was complete. Quality control (QC) issues identified during validation are discussed below. Refer to the Target Analyte Summary Hit(s) in Attachment A for a listing of all detected results, qualified results, and associated qualifications, where applicable. The nonconformances for each section discussed below are presented in Attachment B.

MS Results

Sample 135-P3C-X35AR-0.4-0.9 was selected for the matrix spike (MS) analysis associated with the samples in this SDG and was used for supporting data quality recommendations. The soluble and insoluble MS recoveries were 95.5% and 103.5%, respectively; which met the quality control (QC) criteria of 75-125%. The post digestion spike (PDS) recovery was 100%, which met the PDS criteria of 85-115%. No data qualification was required on the basis of spike recoveries.

Percent Solids

The moisture content of sample 135-P3C-X47AR-16.6-17.1 exceeded the acceptable limit of 50%; therefore, the result was qualified (J) as estimated.

Sample Results

Reported results (flagged B by the laboratory) that were less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL) are approximate values and have been qualified as estimated (J).

Data Quality and Usability

In general, these data appear to be valid and may be used for decision-making purposes. No data were rejected. Qualified results, if applicable, are presented in Attachments A and B.

Sample results reported between the MDL and RL, and or qualified due to high percent moisture content are usable as estimated values with an unknown directional bias.

ATTACHMENTS

Attachment A: Target Analyte Summary Hitlist(s)

Attachment B: Data Validation Report Form

Attachment A

Target Analyte Summary Hitlist(s)

Soil Target Analyte Summary Hit List (Hexavalent Chromium)

Site Name PPG Garfield Avenue Remedial Action (GARA) - P3C PDI
Sampling Date December 2, 2014
Lab Name/ID Accutest, Dayton, NJ
SDG No JB83043
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID 135-FB20141202

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-P3C-X35AR-0.4-0.9	JB83043-1	CHROMIUM (HEXAVALENT)	U	0.30B	0.30	0.41	Qualify	31
135-P3C-X36AR-0.0-0.5	JB83043-3	CHROMIUM (HEXAVALENT)	U	13.9	13.9	0.45	-	-
135-P3C-X47AR-10.0-10.5	JB83043-5	CHROMIUM (HEXAVALENT)	U	2.1	2.1	0.51	-	-
135-P3C-X47AR-12.0-12.5	JB83043-6	CHROMIUM (HEXAVALENT)	U	0.52	0.52	0.48	-	-
135-P3C-X47AR-16.6-17.1	JB83043-7	CHROMIUM (HEXAVALENT)	U	1.4	1.4	0.82	Qualify	22
135-P3C-X47AR-17.1-17.6	JB83043-8	CHROMIUM (HEXAVALENT)	U	0.92	0.92	0.74	-	-
135-P3C-X47AR-6.5-7.0	JB83043-4	CHROMIUM (HEXAVALENT)	U	0.55	0.55	0.51	-	-

Note: A “U” under Method Blank column indicates a nondetect result.
A “U” under the Laboratory Sample Result and Validation Sample Result columns indicates a nondetect result at the RL.

NJDEP Laboratory Footnote

1. The value reported is less than or equal to 3x the value in the preparation/reagent blank. It is the policy of NJDEP-DPFSR to negate the reported value due to probable foreign contamination unrelated to the actual sample. The end-user, however, is alerted that a reportable quantity of the analyte was detected.

2. The value reported is greater than three (3) times but less than ten (10) times the value in the preparation/reagent blank and is considered "real". However, the reported value must be quantitatively qualified "J" due to the preparation/reagent blank contamination. The "B" qualifier alerts the end-user to the presence of this analyte in the preparation/reagent blank.

3. The value reported is less than or equal to three (3) times the value in the trip/field blank. It is the policy of NJDEP-DPFSR to negate the reported value as due to probable foreign contamination unrelated to the actual sample. The end-user, however, is alerted that a reportable quantity of the analyte was detected.

4. The value reported is greater than three (3) times but less than ten (10) times the value in the trip/field blanks and is considered "real". However, the reported value must be quantitatively qualified "J" due to trip/field blank contamination.

5. The concentration reported by the laboratory is incorrectly calculated.

6. The laboratory failed to report the presence of the analyte in the sample.

7. The reported Hexavalent Chromium value was qualified because the Calibration Check Standard was not within the recovery range (90-110 percent).

8. In the Duplicate Sample Analysis, Hexavalent Chromium fell outside the control limits of $\leq$ 20 percent for sample results > 4xRL or + RL for sample results < 4xRL. Therefore, the result was qualified.

9. This analyte was rejected because the laboratory performed the Duplicate Analysis on a field blank.

10. The reported value was qualified because the PVS recovery was greater than 115 percent.

11. The reported value was qualified because the PVS recovery was less than 85 percent.

12. The non-detected value was qualified (UJ) because the PVS recovery was less than 85 percent. The possibility of a false negative exists.

13. The reported analyte was qualified because the associated Calibration Blank result was greater than the MDL.

14. The laboratory made a transcription error. No hits were found in the raw data.

15. This analyte is rejected because the laboratory exceeded the holding time for digestion and analysis.

16. The laboratory subtracted the preparation/reagent blank from the sample result. The Reviewer's calculation puts the preparation/reagent blank back into the result.

17. The photocopy is unreadable. Therefore, the QA reviewer cannot read the laboratory's reported concentration result.

18. The reported value was qualified because the predigestion spike recovery was less than 75 %, but greater than 50%.

19. The reported value was qualified because the predigestion spike recovery was greater than 125 percent.

20. The non-detected value was qualified (UJ) because the predigestion and or redigestion spike recovery was less than 75 percent. The possibility of a false negative exists.

21. The reported result was qualified or rejected because the laboratory did not record the pH value(s) of the sample in a laboratory notebook.

22. The reported value was qualified (J/UJ) because the sample moisture content exceeded 50 percent.

23. The sample result was rejected because the soluble and insoluble matrix spike recoveries were less than 50%.

24. The detected sample result was qualified (J) because the incorrect spike concentration was used.

25. The reported sample results were rejected because the predigestion spike recovery was greater than 150 percent.

26. The reported sample results were rejected because the redigestion spike recovery was greater than 150 percent.

27. The reported value was qualified (J) because the redigestion spike recovery was less than 75 percent.

28. The reported value was qualified (J/UJ) because the sample digestion temperature was less than 90C.

29. In the Field Duplicate Sample Analysis, Hexavalent Chromium fell outside the control limits of $\leq$ 20% for sample results > 4xRL or + RL for sample results < 4xRL. Therefore, the result was qualified.

30. The reported value was qualified as estimated (J/UJ) but the bias is uncertain due to both high and low MS recoveries.

31. The reported result was greater than the MDL but less than the RL and qualified (J) as estimated by the laboratory.

32. The reported value was qualified because the sample replicate precision criterion of < 20% for method 7199 was exceeded.

33. The reported value was qualified (J/UJ) because the laboratory control sample (LCS) recovery was less than 80%.

34. The reported value was qualified (J) because the laboratory control sample (LCS) recovery was greater than 120%.

35. The reported result was qualified because the matrix spike analysis was not performed at the proper frequency.

36. The reported result was qualified because the laboratory duplicate analysis was not performed at the proper frequency.

37. The result was qualified because the cooler temperature upon sample receipt exceeded 6C.

38. The reported value was qualified because the redigestion spike recovery was greater than 125 percent.

39. The reported result was rejected because the laboratory failed to perform the reanalysis due to insufficient sample volume.

40. The reported results was qualified because the laboratory failed to analyze an ending CCB.

41. The reported result was qualified because the laboratory failed to make the proper method specific pH adjustment.

42. The reported result was rejected because the laboratory failed to reanalyze the MS and associated sample(s) due to failed MS recoveries.

43. The percent difference between total and dissolved Hexavalent Chromium results fell outside the control limits of < 20% for sample results > 4xRL or +/- RL for sample results < 4xRL. Therefore, the results were qualified.

44. The dissolved Hexavalent Chromium results were greater than the total Hexavalent Chromium results for sample results > 4xRL and the absolute difference was >RL. Therefore, the results were qualified.

45. The reported result was qualified as estimated due to negative instrument drift.

Attachment B

Data Validation Report Form

Client Name: PPG Industries	**Project Number:** 60314351.GA.DE.PDI.P3
Site Location: PPG Garfield Avenue Remedial Action (GARA) - P3C PDI, Jersey City, NJ	**Project Manager:** Scott Mikaelian
Laboratory: Accutest, Dayton, NJ	**Type of Validation:** Full
Laboratory Job No: JB83043	**Date Checked:** 12/19/2014
Validator: Dion Lewis	**Peer:** Lisa Krowitz

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X			
Field I.D. included?	X			
Laboratory I.D. included?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6C?	X			
Signed COCs included?	X			Initial relinquish time not recorded - NO IMPACT on these rapid TAT samples
Date of sample collection included?	X			
Date of sample digestion included?	X			
Holding time to digestion met criteria? (Soils -30 days from collection to digestion.)	X			
Date of analysis included?	X			
Holding time to analysis met criteria? (Soils -168 hours from digestion to analysis; Aqueous - 24 hours from collection to analysis.	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			

Definitions: MDL - Method Detection Limit; %R - Percent Recovery; RL - Reporting Limit; RPD - Relative Percent Difference; RSD - Relative Standard Deviation :Corr - Correlation Coefficient.

ITEM	YES	NO	N/A	COMMENTS
Initial calibration documentation included in lab package?	X			
1) Blank plus 4 standards (7196A) or blank plus 3 standards (7199)	X			
2) Correlation coefficient of =0.995 (7196A) or =0.999 (7199)	X			
3) Calibrate daily or each time instrument is set up.	X			
Calibration Check Standard (CCS) for 7196A and Quality Control Sample (QCS) for 7199 Included in Lab Package?	X			
1) %R criteria met? (90 - 110%)	X			
2) Correct frequency of one per every 10 samples	X			
3) CCS and QCS from independent source and at mid-level of calibration curve	X			
Calibration Blanks	X			
1) Analyzed prior to initial calibration standards and after each CCS/QCS?	X			
2) Absolute value should not exceed MDL.	X			
Method Blank, Field Blanks and/or Equipment Blanks Included in Lab Package?	X			
1) Method blank analyzed with each preparation batch?	X			
2) Absolute value should not exceed MDL.	X			
Eh and pH Data				
1) Eh and pH data was included and plotted for all samples?	X			
Soluble Matrix Spike Data Included in Lab Package?	X			
1) Soluble Matrix %R criteria met? (75-125%R).	X			
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?	X			
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Insoluble Matrix Spike Data Included in Lab Package?	X			
1) Insoluble Matrix %R criteria met? (75-125%R).	X			
2) Was the spike concentration around 400 to 800 mg/Kg?	X			Insoluble spike 876 - NO IMPACT
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			

ITEM	YES	NO	N/A	COMMENTS
Post Digestion Spike	X			
1) Post Digestion Spike %R criteria met? (85-115%R).	X			
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?	X			
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Sample Duplicate Data Included in Lab Package?	X			
1) RPD criteria met? (RPD =20%) if both results are =4x RL or absolute difference =RL if either or both results are <4xRL.	X			
2) Was a sample duplicate analyzed at the frequency of 1 per batch or 20 samples?	X			
Was a Laboratory Control Sample (LCS) Included in Lab Package?	X			
1) %R criteria met? (80-120%R).	X			
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples?	X			
Were any Field Duplicate samples submitted with this SDG?		X		
1) Were Field duplicate RPD criteria met? (RPD=20% for both sample results >4xRL or absolute difference = RL if either or both results are <4xRL.			X	
Were all sample quantitation and reporting requirements met?	X			
1) Were all solid samples reported with percent solids > 50%?		X		JB83043-7 solids 48.5%
2) Were any samples analyzed or reported with dilutions?		X		
Miscellaneous Items				
1) For soils by 7196A, was the pH within a range of 7.0-8.0?	X			
2) For soils by 7199, was the pH within a range of 9.0-9.5?			X	
3) For aqueous by 7196A, was the pH with a range of 1.5-2,5?	X			EB sample apparently mis-labeled as JB83403-2 on pH adjustment log
4) For soils (3060A), was the digestion temperature 90-95C for at least 60 minutes?	X			
5) For 7199, was each sample injected twice and was the RPD =20?			X	

Matrix Spikes

Sample ID	Analyte	Analysis Batch	Matrix Spike	% Recovery	Lower Limit	Upper Limit	PDS	PDS Limit
135-P3C-X35AR-0.4-0.9	CHROMIUM (HEXAVALENT)	GP85211/GN16598	Soluble	95.5	75	125	100	85-115
135-P3C-X35AR-0.4-0.9			Insoluble	103.5	75	125	-	-

Percent Solids

Sample ID	Percent Solids (%)	Status
135-P3C-X35AR-0.4-0.9	96.8	ok @50%
135-P3C-X36AR-0.0-0.5	89.3	ok @50%
135-P3C-X47AR-10.0-10.5	79.1	ok @50%
135-P3C-X47AR-12.0-12.5	83.7	ok @50%
135-P3C-X47AR-16.6-17.1	48.5	<50%
135-P3C-X47AR-17.1-17.6	54	ok @50%
135-P3C-X47AR-6.5-7.0	78.9	ok @50%

SDG#: JB83043, Method 7196	x - concentration	y - response
Batch: GP85211/GN16598		
Cr+6 ICAL 12/5/2014	0	0
Soils	0.01	0.008
(p 49 of data pkg.)	0.05	0.045
	0.1	0.088
	0.3	0.255
	0.5	0.415
	0.8	0.657
	1	0.838

				(p 49 of data pkg.)
AECOM Calculated Intercept	0.0020	OK	Reported intercept	0.0020
AECOM Slope	0.8296	OK	Reported Slope	0.8296
AECOM Calculated r	0.99989	OK	Reported r	0.99989

LCS calculation	**GP85211-B1**	**p 25, 49**		
Background absorbance	0			
Sample absorbance	0.83			
LCS Soluble Instrument Response	0.83			
Instrument Concentration (mg/L)	0.998			
Sample weight (kg)	0.0025			
Percent solids	1			
Dilution Factor	1			
AECOM Calculated LCS Result (mg/kg)	39.9	OK	Reported Result (mg/kg)	39.9

%R = Found/True*100	**GP85211-B1**	**p 25, 49**		
True Value (mg/kg)	40.0			
AECOM Calculated %R	99.8	OK	Reported %R	99.8

MS calculation	**GP85211-S1**	**p 9, 27, 28, 49, 52**	**JB83043-1**	
Background reading	0.005			
Total absorbance	0.806			
Total absorbance - background	0.801			
Instrument Concentration (mg/L)	0.9630			
Sample weight (kg)	0.00251			
Percent solids	0.968			
Dilution Factor	1			
AECOM Calculated MS Result (mg/kg)	39.6	OK	Reported Result (mg/kg)	39.6

%R = Found/True*100	**GP85211-S1**	**p 9, 27, 28, 49, 52**	**JB83043-1**	
True Value (mg/kg)	41.2			
Native concentration (mg/kg)	0.3			
AECOM Calculated MS Result %R	95.5	OK	Reported %R	95.5

Percent Solids	**JB83043-1**	**p 28**		
Empty dish weight (g)=	24.52			
Wet weight (g)=	32.65			
Dry weight (g)=	32.39			
AECOM %solids =	96.8	OK	Reported %solids=	96.8

Reporting Limit	**JB83043-1**	**p 9, 28, 49, 52**

Low Standard	0.01			
Initial weight (kg)	0.00252			
Final volume (L)	0.1			
Percent solids	0.968			
Dilution Factor	1			
AECOM Calculated Reporting Limit	0.41	OK	Reported RL (mg/kg)=	0.41

Sample Calculations	**JB83043-1**	**p 9, 28, 49, 52**		
Background reading	0.007			
Total absorbance	0.015			
Total absorbance - background	0.008			
Instrument Response (mg/L)	0.007			
Sample weight (kg)	0.00252			
Final Volume (L)	0.1			
Percent solids	0.968			
Dilution Factor	1			
AECOM Calculated Result (mg/kg)	0.30	OK	Reported Result (mg/kg)	0.30B

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Data Validation Report

Project:	Narula Site 135 PDI Soil Sampling	
Laboratory:	Accutest, Dayton, NJ	
Laboratory Job No.:	JC2722 and JC2722R	
Analysis/Method:	Hexavalent Chromium SW846 3060A/7196,7199	
Validation Level:	Full	
Site Location/Address:	Narula Site 135 PDI Sampling /Jersey City, NJ	
AECOM Project No:	60314351.GA.DE.PDI.P3	
Prepared by:	Sharon McKechnie /AECOM	Completed on: 09/21/2015
Reviewed by:	Mary Kozik/AECOM	File Name: JC2722_R_2015/09/22_DV Report-F

Introduction

The data were reviewed in accordance with the FSP-QAPP and the following NJDEP validation Standard Operating Procedures (SOP):

- NJDEP Office of Data Quality SOP 5.A.10, Rev 3 (September 2009), SOP for Analytical Data Validation of Hexavalent Chromium - for USEPA SW-846 Method 3060A, USEPA SW-846 Method 7196A and 7199

The results of quality control data analyzed with site samples were used to assess the overall reliability of the data. The following qualifiers were used to identify data quality issues:

U: Indicates the analyte was not detected in the sample above the sample reporting limit.

J: Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

UJ: Indicates the analyte was not detected above the reporting limit and the reporting limit was approximate.

UB: The analyte concentration is less than or equal to three (3) times the concentration in the associated method/prep blank. The presence of the analyte in the sample is negated (UB) due to laboratory contamination.

JB: The analyte concentration is greater than three (3) times, but less than or equal to ten (10) times the concentration in the associated method/prep blank. The presence of that analyte in the sample is considered "real". The concentration is quantitatively qualified (JB) due to method blank contamination.

R: The sample result was rejected due to serious deficiencies; the presence or absence of the analyte could not be confirmed.

RA: The sample result was rejected but is still considered usable.

Sample Information

The samples listed below were collected by AECOM on August 31, 2015, as part of the Narula Site 135 PDI Soil Sampling at the Jersey City, NJ site. Only the sample(s) and parameter(s) listed below were validated.

Field ID	Laboratory ID	Matrix	Fraction
135-AA38A-1.0-1.5	JC2722-1,1R	Soil	Hexavalent Chromium
135-AA38A-11.0-11.5	JC2722-9,9R	Soil	Hexavalent Chromium
135-AA38A-13.0-13.5	JC2722-10,10R	Soil	Hexavalent Chromium
135-AA38A-15.0-15.5	JC2722-6,6R	Soil	Hexavalent Chromium
135-AA38A-16.5-17.0	JC2722-7,7R	Soil	Hexavalent Chromium
135-AA38A-17.0-17.5	JC2722-8,8R	Soil	Hexavalent Chromium
135-AA38A-3.0-3.5	JC2722-2,2R	Soil	Hexavalent Chromium
135-AA38A-5.0-5.5	JC2722-3,3R	Soil	Hexavalent Chromium
135-AA38A-7.0-7.5	JC2722-4,4R	Soil	Hexavalent Chromium
135-AA38A-9.0-9.5	JC2722-5,5R	Soil	Hexavalent Chromium
135-FB20150831 (Equipment Blank)	JC2722-11	Aqueous	Hexavalent Chromium
135-Z41-0.1-0.6	JC2722-12,12R	Soil	Hexavalent Chromium
135-Z41-1.5-2.0	JC2722-13,13R	Soil	Hexavalent Chromium
135-Z41-11.5-12.0	JC2722-18,18R	Soil	Hexavalent Chromium
135-Z41-12.5-13.0	JC2722-19,19R	Soil	Hexavalent Chromium
135-Z41-12.5-13.0X (Field Duplicate of 135-Z41-12.5-13.0)	JC2722-20,20R	Soil	Hexavalent Chromium
135-Z41-13.0-13.5	JC2722-21,21R	Soil	Hexavalent Chromium
135-Z41-13.5-14.0	JC2722-22,22R	Soil	Hexavalent Chromium
135-Z41-3.5-4.0	JC2722-14,14R	Soil	Hexavalent Chromium
135-Z41-5.5-6.0	JC2722-15,15R	Soil	Hexavalent Chromium
135-Z41-7.5-8.0	JC2722-16,16R	Soil	Hexavalent Chromium
135-Z41-9.5-10.0	JC2722-17,17R	Soil	Hexavalent Chromium

The samples were collected following the procedures detailed in the Remedial Investigation Work Plan - Soil for Non-Residential Chromate Chemical Production Waste Sites 114, 132, 133, 135, 137, 143, and 186, Jersey City, New Jersey, or applicable proposal or work plan, and the Field Sampling Plan/Quality Assurance Project Plan for Non-Residential and Residential Chromium Sites Hudson County, New Jersey (December 2011).

General Comments

The data package was complete with the following exception:

- For the 7199 analysis, the spiked sample was 135-Z41-13.5-14.0 (JC2772-22R); however, the ancillary parameters (ferrous iron, sulfide screen, and TOC) were reported for sample 135-Z41-0.1-0.6 (JC2772-12R). The laboratory was contacted during validation and a reanalysis requested. The TOC analysis for 135-Z41-13.5-14.0 (JC2772-22R) was performed outside of holding time; however, since the LCS and instrument QC met laboratory limits, the TOC result was positive and the data are used only to provide additional information regarding the nature of the sample, no action other than this notation was taken.

The data package was complete. Quality control (QC) issues identified during validation are discussed below. Refer to the Target Analyte Summary Hit(s) in Attachment A for a listing of all detected and qualified results. The nonconformances for each section discussed below are presented in Attachment B.

Hexavalent Chromium

MS Results

There were two matrix spike (MS) samples associated with the soil samples in this SDG and used for supporting data quality recommendations:

- 135-AA38A-1.0-1.5 (JC2722-1): Initial batch GP91788/GN32066, Reanalysis batch GP92027/GN32537, samples JC2722-1 through JC2722-10 (inclusive); and

- 135-Z41-13.5-14.0 (JC2722-22):Initial batch GP91792/GN32110, Reanalysis batch GP92029/GN32572, samples JC2722-12 through JC2722-22 (inclusive)

135-AA38A-1.0-1.5

Sample 135-AA38A-1.0-1.5 (JC2722-1) was selected for the soil matrix spike (MS) analysis and used for supporting data quality recommendations. The soluble and insoluble MS recoveries from the initial batch were -2.5% and 86.2% respectively. The soluble MS recovery did not meet the quality control (QC) criteria of 75-125%R, and was less than 50%. The post digestion spike (PDS) recovery was 80.5%, and after pH adjustment was 115%, which met the PDS criteria of 85-115%.

Based on poor soluble MS recoveries, less than 50%R, the MS and associated samples were reanalyzed using Method 7196. The soluble and insoluble MS recoveries from the re-analysis were 33.9% and 83.8%, respectively. The soluble MS recovery did not meet the QC criteria of 75-125%R. The PDS recovery was 72%, which did not meet the PDS criteria of 85-115%. After pH adjustment the PDS recovery was 84.6%.

Since the MS failed to meet QC criteria, additional parameters were analyzed to determine if possible matrix interferences could be the cause for the poor MS recoveries. The soil samples were tested for pH and oxidation reduction potential (ORP), and plotted on an Eh/pH phase diagram. From this chart, the source sample for the MS analysis of sample 135-AA38A-1.0-1.5 (JC2722-1) was plotted below the phase change line, indicating reducing potential within the sample matrix, incapable of supporting hexavalent chromium. Ferrous iron, sulfide screen, and total organic carbon (TOC) were performed on this MS source sample to confirm the oxidizing/ reducing potential within the sample matrix. The sulfide screen was reported as nondetect, indicating no reducing agents within the sample matrix; however, the ferrous iron (0.56%) and the TOC results (50300 mg/Kg) were positive, indicating potential reducing agents within the sample matrix.

Since the MS and PDS recoveries from both the initial and reanalysis did not meet the MS QC requirements, but at least one MS recovery was greater than 50%, the highest detected hexavalent chromium result or the nondetected result with the lowest reporting limit (RL) was reported for each soil sample. The reported hexavalent chromium results in soil samples JC2722-1 through JC2722-10 were qualified as estimated (J/UJ) due to the poor MS and PDS recoveries.

135-Z41-13.5-14.0

Sample 135-Z41-13.5-14.0 (JC2722-22) was selected for the soil MS analysis and used for supporting data quality recommendations. The soluble and insoluble MS recoveries from the initial batch were 1.2% and 39.7% respectively, which did not meet the QC criteria of 75-125%R, and were both less than 50%. The PDS recovery was 23.3%, and after pH adjustment was 20%, which did not meet the PDS criteria of 85-115%.

Based on the very low MS and PDS recoveries, often an indication that Method 7199 may be more successful in producing improved MS recovery, the MS and soil samples were reanalyzed using Method 7199. The soluble and insoluble MS results from the reanalysis by method 7199 were 18.2% and 53.5%; the soluble and insoluble MS recoveries did not meet QC criteria of 75-125%, and the soluble MS recovery was less than 50%. The PDS result was 99.1%, which was within the QC criteria of 85-115%.

Since the MS failed to meet QC criteria, additional parameters were analyzed to determine if possible matrix interferences could be the cause for the poor MS recoveries. The soil samples were tested for pH and oxidation reduction potential (ORP), and plotted on an Eh/pH phase diagram. From this chart, the source sample for the MS analysis of sample 135-Z41-13.5-14.0 (JC2722-22) was plotted below the phase change line, indicating reducing potential within the sample matrix, incapable of supporting hexavalent chromium. Ferrous iron, sulfide screen, and total organic carbon (TOC) were performed on this MS source sample to confirm the oxidizing/ reducing potential within the sample matrix. The sulfide screen was reported as nondetect, indicating no reducing agents within the sample matrix; however, the ferrous iron (1.5%) and the TOC results (35,800 mg/Kg) were positive, indicating potential reducing agents within the sample matrix.

Since the MS recoveries from both the initial and reanalysis did not meet the MS QC requirements, but at least one MS recovery was greater than 50%, the highest detected hexavalent chromium result or the nondetected result with the lowest reporting limit was reported for each soil sample. The reported hexavalent chromium results in soil samples JC2722-12 through JC2722-22 were qualified as estimated (J/UJ) due to the poor MS recoveries.

No further qualification was taken based on the low initial PDS recovery since the reanalysis PDS %R was acceptable.

Laboratory Duplicate Precision

There were two samples selected by the laboratory to demonstrate laboratory precision capabilities:

- 135-AA38A-1.0-1.5 (JC2722-1): Initial batch GP91788/GN32066, Reanalysis batch GP92027/GN32537, samples JC2722-1 through JC2722-10 (inclusive); and

- 135-Z41-13.5-14.0 (JC2722-22):Initial batch GP91792/GN32110, Reanalysis batch GP92029/GN32572, samples JC2722-12 through JC2722-22 (inclusive)

In the reanalysis run for sample 135-AA38A-1.0-1.5 (JC2722-1), the RPD exceeded the QC criteria of 20%. The sample and duplicate results were greater than 4 times the RL; therefore, samples JC2722-1 through JC2722-10, if reported from the reanalysis, were estimated (J/UJ) on the basis of duplicate precision.

In the reanalysis run for sample 135-Z41-13.5-14.0 (JC2722-22), the RPD was not calculable since the duplicate result was nondetected. The detected result for the parent sample was less than 4 times the RL; therefore, no qualifications were applied on the basis of duplicate precision.

Field Duplicate Results

The samples making up the field duplicate (FD) pair in this SDG were 135-Z41-12.5-13.0 (JC2772-19) and 135-Z41-12.5-13.0X (JC2772-20). Both results were reported from the 7199 reanalysis; therefore, the RPD was calculated from those results. The RPD met the 50% QC criteria; thus no qualification was necessary on the basis of FD results.

Percent Solids

The moisture content for samples 135-AA38A-17.0-17.5 (JC2722-8) and 135-Z41-13.0-13.5 (JC2722-21) exceeded the acceptable limit of 50% and thus the sample results were qualified (J) as estimated on the basis of moisture content.

Sample Results

Reported results (flagged B by the laboratory) less than the RL, but greater than or equal to the method detection limit (MDL), are approximate values and have been qualified as estimated (J) on the basis of quantitation uncertainty.

Data Quality and Usability

In general, these data appear to be valid and may be used for decision-making purposes; no data were rejected. Qualified and detected results are presented in Attachments A and B.

The hexavalent chromium soil results in this SDG are usable as estimated (J/UJ) values with the potential for low bias due to low MS and PDS recoveries. The MS sample matrix appears to be reducing based on the Eh-pH plot and the presence of TOC and ferrous iron. The highest detected hexavalent chromium result or the nondetect result with the lowest RL was reported for each soil sample.

The following additional issues were noted for this sample set:

- Sample results reported between the MDL and RL, and/or qualified due to high percent moisture content are considered estimated values with an unknown directional bias.

- The results for soil samples from location AA38A and reported from the reanalysis, were qualified for laboratory duplicate imprecision and are considered estimated values with an unknown directional bias.

ATTACHMENTS

Attachment A: Target Analyte Summary Hitlist(s)

Attachment B: Data Validation Report Form

Attachment A

Target Analyte Summary Hitlist(s)

Soil Target Analyte Summary Hit List (Hexavalent Chromium)

Site Name Narula Site 135 PDI Soil Sampling
Sampling Date August 31, 2015
Lab Name/ID Accutest, Dayton, NJ
SDG No JC2722 and JC2722R
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID 135-FB20150831

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-AA38A-1.0-1.5	JC2722-1	CHROMIUM (HEXAVALENT)	U	3.4	3.4	0.45	Qualify	1
135-AA38A-11.0-11.5	JC2722-9	CHROMIUM (HEXAVALENT)	U	U	U	0.48	Qualify	1
135-AA38A-13.0-13.5	JC2722-10R	CHROMIUM (HEXAVALENT)	U	0.83	0.83	0.50	Qualify	1,3
135-AA38A-15.0-15.5	JC2722-6R	CHROMIUM (HEXAVALENT)	U	0.27B	0.27	0.48	Qualify	1,3,4
135-AA38A-16.5-17.0	JC2722-7R	CHROMIUM (HEXAVALENT)	U	0.98	0.98	0.54	Qualify	1,3
135-AA38A-17.0-17.5	JC2722-8R	CHROMIUM (HEXAVALENT)	U	1.5	1.5	0.88	Qualify	1,2,3
135-AA38A-3.0-3.5	JC2722-2R	CHROMIUM (HEXAVALENT)	U	0.67	0.67	0.47	Qualify	1,3
135-AA38A-5.0-5.5	JC2722-3R	CHROMIUM (HEXAVALENT)	U	1.1	1.1	0.49	Qualify	1,3
135-AA38A-7.0-7.5	JC2722-4R	CHROMIUM (HEXAVALENT)	U	0.34B	0.34	0.48	Qualify	1,3,4
135-AA38A-9.0-9.5	JC2722-5R	CHROMIUM (HEXAVALENT)	U	0.82	0.82	0.49	Qualify	1,3
135-Z41-0.1-0.6	JC2722-12	CHROMIUM (HEXAVALENT)	U	2.1	2.1	0.43	Qualify	1
135-Z41-13.0-13.5	JC2722-21	CHROMIUM (HEXAVALENT)	U	1.4	1.4	0.99	Qualify	1,2
135-Z41-9.5-10.0	JC2722-17	CHROMIUM (HEXAVALENT)	U	0.53	0.53	0.46	Qualify	1
135-Z41-1.5-2.0	JC2722-13R	CHROMIUM (HEXAVALENT)	U	4.9	4.9	1.4	Qualify	1
135-Z41-11.5-12.0	JC2722-18R	CHROMIUM (HEXAVALENT)	U	0.32B	0.32	0.96	Qualify	1,4
135-Z41-12.5-13.0	JC2722-19R	CHROMIUM (HEXAVALENT)	U	0.45B	0.45	0.47	Qualify	1,4
135-Z41-12.5-13.0X	JC2722-20R	CHROMIUM (HEXAVALENT)	U	0.40B	0.40	0.47	Qualify	1,4
135-Z41-13.5-14.0	JC2722-22R	CHROMIUM (HEXAVALENT)	U	0.86B	0.86	2.9	Qualify	1,4
135-Z41-3.5-4.0	JC2722-14R	CHROMIUM (HEXAVALENT)	U	4.8	4.8	0.91	Qualify	1

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-Z41-5.5-6.0	JC2722-15R	CHROMIUM (HEXAVALENT)	U	0.92B	0.92	2.2	Qualify	1,4
135-Z41-7.5-8.0	JC2722-16R	CHROMIUM (HEXAVALENT)	U	U	U	1.8	Qualify	1

Note: A “U” under Method Blank column indicates a nondetect result.
A “U” under the Laboratory Sample Result and Validation Sample Result columns indicates a nondetect result at the RL.

NJDEP Laboratory Footnote

1. The reported positive or nondetected value was qualified (J/UJ) because the matrix spike recovery was less than 75 %, but greater than 50%.

2. The reported value was qualified (UJ) because the sample moisture content exceeded 50%.

3. In the reanalysis laboratory duplicate analysis, the RPD exceeded the control limits of ≤ 20% percent for sample results > 4xRL or ± RL for sample results < 4xRL. Therefore, results reported from the reanalysis were qualified (J/UJ).

4. The reported result was greater than the MDL but less than the RL and qualified (J) as estimated.

Attachment B

Data Validation Report Form

Client Name: PPG Industries	Project Number: 60314351.GA.DE.PDI.P3
Site Location: Narula Site 135 PDI Soil Sampling, Jersey City, NJ	Project Manager: Scott Mikaelian
Laboratory: Accutest, Dayton, NJ	Type of Validation: Full
Laboratory Job No: JC2722 and JC2722R	Date Checked: 9/21/15
Validator: Sharon McKechnie	Peer: Mary Kozik

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X			
Field I.D. included?	X			
Laboratory I.D. included?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6C?	X			
Signed COCs included?	X			
Date of sample collection included?	X			
Date of sample digestion included?	X			
Holding time to digestion met criteria? (Soils -30 days from collection to digestion.)	X			
Date of analysis included?	X			
Holding time to analysis met criteria? (Soils -168 hours from digestion to analysis; Aqueous - 24 hours from collection to analysis.	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			

Definitions: MDL Method Detection Limit; %R Percent Recovery; RL Reporting Limit; RPD Relative Percent Difference; RSD Relative Standard Deviation: Corr Correlation Coefficient.

ITEM	YES	NO	N/A	COMMENTS
Initial calibration documentation included in lab package?	X			
1) Blank plus 4 standards (7196A) or blank plus 3 standards (7199)	X			
2) Correlation coefficient of =0.995 (7196A) or =0.999 (7199)	X			
3) Calibrate daily or each time instrument is set up.	X			
Calibration Check Standard (CCS) for 7196A and Quality Control Sample (QCS) for 7199 Included in Lab Package?	X			
1) %R criteria met? (90 - 110%)	X			
2) Correct frequency of one per every 10 samples	X			
3) CCS and QCS from independent source and at mid-level of calibration curve	X			
Calibration Blanks	X			
1) Analyzed prior to initial calibration standards and after each CCS/QCS?	X			
2) Absolute value should not exceed MDL.	X			
Method Blank, Field Blanks and/or Equipment Blanks Included in Lab Package?	X			
1) Method blank analyzed with each preparation batch?	X			
2) Absolute value should not exceed MDL.	X			
Eh and pH Data	X			
1) Eh and pH data was included and plotted for all samples?	X			
Soluble Matrix Spike Data Included in Lab Package?	X			JC2722-1 JC2722-22
1) Soluble Matrix %R criteria met? (75-125%R).		X		See nonconformance table
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?		X		JC2722-1 Initial and rerun spiked at 44.4 mg/kg and 44.2 mg/kg, respectively .The data was not affected. JC2722-22 Initial and rerun spiked at 70.2 mg/kg and 69.9 mg/kg, respectively .The data was not affected.
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			

ITEM	YES	NO	N/A	COMMENTS
Insoluble Matrix Spike Data Included in Lab Package?	X			JC2722-1 JC2722-22
1) Insoluble Matrix %R criteria met? (75-125%R).		X		See nonconformance table
2) Was the spike concentration around 400 to 800 mg/Kg?		X		JC2722-1 Initial and rerun spiked at 1130 mg/kg and 1370 mg/kg, respectively .The data was not affected. JC2722-22 Initial and rerun spiked at 1910 mg/kg and 1700 mg/kg, respectively .The data was not affected.
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Post Digestion Spike	X			JC2722-1 JC2722-22
1) Post Digestion Spike %R criteria met? (85-115%R).	X	X*		JC2722-1 *See nonconformance table JC2722-22, OK
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?	X			
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Sample Duplicate Data Included in Lab Package?	X			JC2722-1 JC2722-22
1) RPD criteria met? (RPD $\leq$ 20%) if both results are ≥4x RL or absolute difference $\leq$ RL if either or both results are <4xRL	X	X*		JC2722-1(reanalysis) *See nonconformance table JC2722-22, OK
2) Was a sample duplicate analyzed at the frequency of 1 per batch or 20 samples?	X			
Was a Laboratory Control Sample (LCS) Included in Lab Package?	X			
1) %R criteria met? (80-120%R).	X			
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples?	X			
Were any Field Duplicate samples submitted with this SDG?	X			JC2722-19 and JC2722-20
11) Were Field duplicate RPD criteria met? (RPD$\leq$50% for both sample results >5xRL or absolute difference $\leq$ RL if either or both results are <5xRL.	X			And see tables
Were all sample quantitation and reporting requirements met?	X			
1) Were all solid samples reported with percent solids > 50%?		X		See nonconformance table

ITEM	YES	NO	N/A	COMMENTS
2) Were any samples analyzed or reported with dilutions?	X			up to 4x
Miscellaneous Items	X			
1) For soils by 7196A, was the pH within a range of 7.0-8.0?	X			
2) For soils by 7199, was the pH within a range of 9.0-9.5?	X			
3) For aqueous by 7196A, was the pH with a range of 1.5-2.5?	X			
4) For soils (3060A), was the digestion temperature 90-95C for at least 60 minutes?	X			
5) For 7199, was each sample injected twice and was the RPD ≤20?	X			

Matrix Spikes

Sample ID	Lab ID	Analyte	Matrix Spike	% Recovery	Lower Limit	Upper Limit
135-AA38A-1.0-1.5	JC2722-1	CHROMIUM (HEXAVALENT)	Soluble	-2.5	75	125
135-AA38A-1.0-1.5	JC2722-1	CHROMIUM (HEXAVALENT)	Insoluble	86.2	75	125
135-AA38A-1.0-1.5	JC2722-1R	CHROMIUM (HEXAVALENT)	Soluble	33.9	75	125
135-AA38A-1.0-1.5	JC2722-1R	CHROMIUM (HEXAVALENT)	Insoluble	83.8	75	125
135-Z41-13.5-14.0	JC2722-22	CHROMIUM (HEXAVALENT)	Soluble	1.2	75	125
135-Z41-13.5-14.0	JC2722-22	CHROMIUM (HEXAVALENT)	Insoluble	39.7	75	125
135-Z41-13.5-14.0	JC2722-22R	CHROMIUM (HEXAVALENT)	Soluble	18.2	75	125
135-Z41-13.5-14.0	JC2722-22R	CHROMIUM (HEXAVALENT)	Insoluble	53.5	75	125

Post Digestion Spikes

Sample ID	Lab ID	Compound	Analysis Batch	% Recovery	pH Adjusted % Recovery	Lower Limit	Upper Limit
135-AA38A-1.0-1.5	JC2722-1	CHROMIUM (HEXAVALENT)	Initial	80.5	115	85	115
135-AA38A-1.0-1.5	JC2722-1R	CHROMIUM (HEXAVALENT)	Reanalysis	72	84.6	85	115
135-Z41-13.5-14.0	JC2722-22	CHROMIUM (HEXAVALENT)	Initial	23.3	20	85	115
135-Z41-13.5-14.0	JC2722-22R	CHROMIUM (HEXAVALENT)	Reanalysis	99.1	NA	85	115

Laboratory Duplicate

Sample ID	Lab ID	Analyte	Sample Result (mg/kg)	Duplicate Result (mg/kg)	QL (mg/kg)	RPD (%)	Action
135-AA38A-1.0-1.5	JC2722-1R	CHROMIUM (HEXAVALENT)	2.7	1.9	0.45	34.8	Estimate (See Memo)
135-Z41-13.5-14.0	JC2722-22R	CHROMIUM (HEXAVALENT)	0.86 B	ND	2.9	NC	Accept (See Memo)

ND – Not detected
NC – Not calculable

Hexavalent Chromium Field Duplicate

Sample ID	Duplicate ID	Sample Result (mg/kg)	QL (mg/kg)	Duplicate Result (mg/kg)	QL (mg/kg)	RPD (%)	Action
135-Z41-12.5-13.0	135-Z41-12.5-13.0X	0.45 B	0.47	0.40 B	0.47	11.7	Accept (See Memo)

Percent Solids

Sample ID	Percent Solids (%)	Status
135-AA38A-1.0-1.5	89.7	ok @50%
135-AA38A-11.0-11.5	83.2	ok @50%
135-AA38A-13.0-13.5	80.7	ok @50%
135-AA38A-15.0-15.5	83.2	ok @50%
135-AA38A-16.5-17.0	74.7	ok @50%
135-AA38A-17.0-17.5	45.6	<50% Estimate (J/UJ)
135-AA38A-3.0-3.5	85.1	ok @50%
135-AA38A-5.0-5.5	81.7	ok @50%
135-AA38A-7.0-7.5	83.8	ok @50%
135-AA38A-9.0-9.5	80.9	ok @50%
135-Z41-0.1-0.6	92.2	ok @50%
135-Z41-1.5-2.0	84.2	ok @50%
135-Z41-11.5-12.0	84.8	ok @50%
135-Z41-12.5-13.0	86.3	ok @50%
135-Z41-12.5-13.0X	86.2	ok @50%
135-Z41-13.0-13.5	40.3	<50% Estimate (J/UJ)
135-Z41-13.5-14.0	56.1	ok @50%
135-Z41-3.5-4.0	84.8	ok @50%
135-Z41-5.5-6.0	75.9	ok @50%
135-Z41-7.5-8.0	66.4	ok @50%
135-Z41-9.5-10.0	86.6	ok @50%

SDG#: JC2722/ Method 7196	x - concentration	y - response
Batch: GN32066		
Cr+6 ICAL 09/7/15	0	0.001
Soil	0.01	0.01
(p. 80 of data pkg)	0.05	0.044
	0.1	0.090
Samples 1-10	0.3	0.257
	0.5	0.425
	0.8	0.657
	1	0.817

				(p. 80 of data pkg)
AECOM Calculated Offset	0.0059	OK	Reported Offset	0.0059
AECOM Slope	0.8167	OK	Reported Slope	0.8167
AECOM Calculated r	0.99982	OK	Reported r	0.99982

LCS calculation	**GP91788-B1**	**P. 54,80**		
Background Absorbance	0			
Total absorbance	0.737			
Total absorbance - background	0.737			
Instrument Concentration	0.895			
Sample weight (mg/kg)	0.0025			
Final Volume (L)	0.1			
Dilution Factor	1			
AECOM Calculated LCS Result (mg/Kg)	35.8	OK	Reported Result (mg/Kg)	35.8

%R = Found/True*100	**GP91788-B1**	**P. 54,80**		
True Value (mg/kg)	40			
AECOM Calculated %R	89.5	OK	Reported %R	89.5

MS calculation	**GP91788-S1**	**P. 56,80**	**JC2722-1**	
Background reading	0.009			
Total absorbance	0.057			
Total absorbance - background	0.048			
Instrument Concentration	0.0516			
Sample weight (mg/kg)	0.00251			
Final Volume (L)	0.1			
Percent solids	0.897			
Dilution Factor	1			
AECOM Calculated MS Result (mg/Kg)	2.3	OK	Reported Result (mg/Kg)	2.3

%R = Found/True*100	**GP91788-S1**	**P. 56,80**	**JC2722-1**	
True Value (mg/kg)	44.4			
Native concentration (mg/Kg)	3.4			
AECOM%R	-2.5	OK	Reported %R	-2.5

Percent Solids	**JC2722-5**	**P. 57**	**135-AA38A-9.0-9.5**	
Empty dish weight=	24.22			
Wet weight=	31.95			
Dry weight=	30.47			
AECOM %solids =	80.9	OK	reported %solids=	80.9

Reporting Limit	**JC2722-1**	**P.12,83**	**135-Y35A-16.2-16.7**	
Low Standard	0.01			
Initial weight (mg/kg)	0.00247			
Final volume (L)	0.1			
Percent solids	0.897			
Dilution Factor	1			
Reporting Limit	0.45	OK	Reported RL (mg/Kg)=	0.45

Sample Calculations	**JC2722-1**	**P.12,80**	**135-Y35A-16.2-16.7**	
Background reading	0.024			
Total absorbance	0.092			
Total absorbance - background	0.068			
Instrument Response	0.076			
Sample weight (mg/kg)	0.00247			
Final Volume (L)	0.1			
Percent solids	0.897			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	3.4	OK	Reported Result (mg/Kg)	3.4

SDG#: JC2722/ Method 7196	x - concentration	y - response
Batch: GN32110		
Cr+6 ICAL 09/8/15	0	0.001
Soil	0.01	0.01
(p. 89 of data pkg)	0.05	0.044
	0.1	0.090
Samples 12-22	0.3	0.257
	0.5	0.425
	0.8	0.657
	1	0.817

				(p. 89 of data pkg)
AECOM Calculated Offset	0.0059	OK	Reported Offset	0.0059
AECOM Slope	0.8167	OK	Reported Slope	0.8167
AECOM Calculated r	0.99982	OK	Reported r	0.99982

LCS calculation	**GP91792-B1**	**P. 54,89**		
Background Absorbance	0			
Total absorbance	0.681			
Total absorbance - background	0.681			
Instrument Concentration	0.827			
Sample weight (mg/kg)	0.0025			
Final Volume (L)	0.1			
Dilution Factor	1			
AECOM Calculated LCS Result (mg/Kg)	33.1	OK	Reported Result (mg/Kg)	33.1

%R = Found/True*100	**GP91792-B1**	**P. 54,89**		
True Value (mg/kg)	40			
AECOM Calculated %R	82.7	OK, rounding	Reported %R	82.8

MS calculation	**GP91792-S1**	**P. 56,89**	**JC2722-22**	
Background reading	0.019			
Total absorbance	0.035			
Total absorbance - background	0.016			
Instrument Concentration	0.0124			
Sample weight (mg/kg)	0.00254			
Final Volume (L)	0.1			
Percent solids	0.561			
Dilution Factor	1			
AECOM Calculated MS Result (mg/Kg)	0.87	OK	Reported Result (mg/Kg)	0.87

%R = Found/True*100	**GP91792-S1**	**P. 56,89**	**JC2722-22**	
True Value (mg/kg)	70.2			
Native concentration (mg/Kg)	0			
AECOM%R	1.2	OK	Reported %R	1.2

Percent Solids	**JC2722-21**	**P. 60**	**135-Z41-13.0-13.5**	
Empty dish weight=	22.72			
Wet weight=	29.45			
Dry weight=	25.43			
AECOM %solids =	40.3	OK	reported %solids=	40.3

Reporting Limit	**JC2722-21**	**P.32,92**	**135-Z41-13.0-13.5**	
Low Standard	0.01			
Initial weight (mg/kg)	0.00250			
Final volume (L)	0.1			
Percent solids	0.403			
Dilution Factor	1			
Reporting Limit	0.99	OK	Reported RL (mg/Kg)=	0.99

Sample Calculations	**JC2722-21**	**P.32,89**	**135-Z41-13.0-13.5**	
Background reading	0.05			
Total absorbance	0.068			
Total absorbance - background	0.018			
Instrument Response	0.015			
Sample weight (mg/kg)	0.00256			
Final Volume (L)	0.1			
Percent solids	0.403			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	1.4	OK	Reported Result (mg/Kg)	1.4

SDG#: JC2722R/ Method 7196
Batch: GN32537
Cr+6 ICAL 09/15/15
Soil
(p. 98 of data pkg)

Samples 1-10

x - concentration	y - response
0	0.001
0.01	0.01
0.05	0.042
0.1	0.086
0.3	0.235
0.5	0.398
0.8	0.644
1	0.811

				(p. 98 of data pkg)
AECOM Calculated Offset	0.0004	OK	Reported Offset	0.0004
AECOM Slope	0.8056	OK	Reported Slope	0.8056
AECOM Calculated r	0.99990	OK	Reported r	0.99990

LCS calculation	**GP92027-B1**	**P. 54,98**		
Background Absorbance	0			
Total absorbance	0.704			
Total absorbance - background	0.704			
Instrument Concentration	0.873			
Sample weight (mg/kg)	0.0025			
Final Volume (L)	0.1			
Dilution Factor	1			
AECOM Calculated LCS Result (mg/Kg)	34.9	OK	Reported Result (mg/Kg)	34.9

%R = Found/True*100	**GP92027-B1**	**P. 54,98**		
True Value (mg/kg)	40			
AECOM Calculated %R	87.3	OK	Reported %R	87.3

MS calculation	**GP92027-S1**	**P. 56,98**	**JC2722-1**	
Background reading	0.061			
Total absorbance	0.383			
Total absorbance - background	0.322			
Instrument Concentration	0.3991			
Sample weight (mg/kg)	0.00252			
Final Volume (L)	0.1			
Percent solids	0.897			
Dilution Factor	1			
AECOM Calculated MS Result (mg/Kg)	17.7	OK	Reported Result (mg/Kg)	17.7

%R = Found/True*100	**GP92027-S1**	**P. 56,98**	**JC2722-1**	
True Value (mg/kg)	44.2			
Native concentration (mg/Kg)	2.7			
AECOM%R	33.8	OK, rounding	Reported %R	33.9

Percent Solids	**JC2722-1**	**P. 63**	**135-Y35A-16.2-16.7**	
Empty dish weight=	28.28			
Wet weight=	34.58			
Dry weight=	33.93			
AECOM %solids =	89.7	OK	reported %solids=	89.7

Reporting Limit	**JC2722-1**	**P.13,101**	**135-AA38A-1.0-1.5**	
Low Standard	0.01			
Initial weight (mg/kg)	0.00250			
Final volume (L)	0.1			
Percent solids	0.897			
Dilution Factor	1			
Reporting Limit	0.45	OK	Reported RL (mg/Kg)=	0.45

Sample Calculations	**JC2722-1**	**P.13,98**	**135-AA38A-1.0-1.5**	
Background reading	0.034			
Total absorbance	0.083			
Total absorbance - background	0.049			
Instrument Response	0.060			
Sample weight (mg/kg)	0.00251			
Final Volume (L)	0.1			
Percent solids	0.897			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	2.7	OK	Reported Result (mg/Kg)	2.7

SDG: JC2722R/ Method 7199 **Batch GN32572**	x - concentration	y - response (area) mAU*min	
Cr+6 ICAL 09/16/15	0.00	0.0047	STDA
Soil	0.005	0.049	STDB
(p. 117-122 of data package)	0.05	0.441	STDC
	0.1	0.908	STDD
Samples 12-22	0.5	4.5019	STDE

				(p. 117-122 of data package)
AECOM Calculated Offset	0.0018	OK	Reported Offset	0.0018
AECOM Slope	9.0004	OK, rounding	Reported Slope	9.0003
AECOM Calculated r	1.0000	OK	Reported r	1.0000

LCS calculation	**GP92029-B1**	**P. 54,128**		
Highest replicate response (AREA, mAU*min)	2.368			
Instrument Concentration (ug/L)	0.263			
Sample weight	0.0025			
Percent solids	1			
Dilution Factor	4			
AECOM Calculated LCS Result (mg/Kg)	42.1	OK	Reported Result (mg/Kg)	42.1

%R = Found/True*100	**GP92029-B1**	**P. 54,128**		
True Value (mg/kg)	40			
AECOM Calculated %R	105.2	OK, rounding	Reported %R	105.3

MS calculation	**GP92029-S1**	**P. 56,135**	**JC2722-22**	
Highest replicate response (mAU*min)	0.43900			
Instrument Concentration (ug/L)	0.0486			
Sample weight	0.00255			
Percent solids	0.561			
Dilution Factor	4			
AECOM Calculated MS Result (mg/Kg)	13.6	OK	Reported Result (mg/Kg)	13.6

%R = Found/True*100	**GP92029-S1**	**P. 56,135**	**JC2722-22**	
True Value (mg/kg)	69.9			
Native concentration (mg/Kg)	0.86			
%R	18.2	OK, rounding	Reported %R	18.2

Percent Solids	**JC2722-13**	**P. 64**	**135-Z41-1.5-2.0**	
Empty dish weight=	26.38			
Wet weight=	32.46			
Dry weight=	31.5			
AECOM %solids =	84.2	OK	reported %solids=	84.2

Reporting limit	**JC2722-13**	**P. 24,110**	**135-Z41-1.5-2.0**	
Low Standard	0.01			
Initial weight (g)	0.00250			
Final volume (L)	0.1			
Percent solids	0.842			
Dilution Factor	3			
Reporting Limit	1.4	OK	Reported RL (mg/Kg)=	1.4

Sample Calculations	**JC2722-13**	**P. 24,110**	**135-Z41-1.5-2.0**
Background reading from highest response	0		
Instrument Response highest response	0.31600		
Total response for replicate 1	0.316		
Instrument Response (mg/L)	0.035		
Sample weight (mg)	0.00251		
Final Volume (L)	0.1		
Percent solids	0.842		
Dilution Factor	3		
AECOM Calculated Result (mg/Kg)	4.96	OK, rounding	Reported Result (mg/Kg) 4.9

7199 Replicate RPDs

Sample ID	Rep 1 (ppm)	Rep 2 (ppm)	RPD%	RPD Criteria ≤20
JC2722-12	0.01161	0.01235	6.2%	OK
JC2722-13	0.10458	0.10339	1.1%	OK
JC2722-14	0.10649	0.10641	0.1%	OK
JC2722-15	0.01680	0.01676	0.2%	OK
JC2722-16	0.00346	0.00361	4.2%	OK
JC2722-17	0.00572	0.00588	2.8%	OK
JC2722-18	0.00647	0.00658	1.7%	OK
JC2722-19	0.00969	0.00931	4.0%	OK
JC2722-20	0.00861	0.00921	6.7%	OK
JC2722-21	0.00638	0.00631	1.1%	OK
JC2722-22	0.01142	0.01172	2.6%	OK

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Data Validation Report

Project:	Narula Site 135 PDI Soil Sampling	
Laboratory:	Accutest, Dayton, NJ	
Laboratory Job No.:	JC2781 and JC2781R	
Analysis/Method:	Hexavalent Chromium SW846 3060A/7196,7199	
Validation Level:	Full	
Site Location/Address:	Narula Site 135 PDI Sampling /Jersey City, NJ	
AECOM Project No:	60314351.GA.DE.PDI.P3	
Prepared by:	Sharon McKechnie /AECOM	Completed on: 09/23/2015
Reviewed by:	Mary Kozik/AECOM	File Name: JC2781_R_2015/09/23_DV Report-F

Introduction

The data were reviewed in accordance with the FSP-QAPP and the following NJDEP validation Standard Operating Procedures (SOP):

- NJDEP Office of Data Quality SOP 5.A.10, Rev 3 (September 2009), SOP for Analytical Data Validation of Hexavalent Chromium - for USEPA SW-846 Method 3060A, USEPA SW-846 Method 7196A and 7199

The results of quality control data analyzed with site samples were used to assess the overall reliability of the data. The following qualifiers were used to identify data quality issues:

U: Indicates the analyte was not detected in the sample above the sample reporting limit.

J: Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

UJ: Indicates the analyte was not detected above the reporting limit and the reporting limit was approximate.

UB: The analyte concentration is less than or equal to three (3) times the concentration in the associated method/prep blank. The presence of the analyte in the sample is negated (UB) due to laboratory contamination.

JB: The analyte concentration is greater than three (3) times, but less than or equal to ten (10) times the concentration in the associated method/prep blank. The presence of that analyte in the sample is considered "real". The concentration is quantitatively qualified (JB) due to method blank contamination.

R: The sample result was rejected due to serious deficiencies; the presence or absence of the analyte could not be confirmed.

RA: The sample result was rejected but is still considered usable.

Sample Information

The samples listed below were collected by AECOM on September 1, 2015, as part of the Narula Site 135 PDI Soil Sampling at the Jersey City, NJ site. Only the sample(s) and parameter(s) listed below were validated.

Field ID	Laboratory ID	Matrix	Fraction
1325-CC32A-8.0-8.5	JC2781-7,7R	Soil	Hexavalent Chromium
135-CC32A-1.0-1.5	JC2781-1,1R	Soil	Hexavalent Chromium
135-CC32A-10.0-10.5	JC2781-8,8R	Soil	Hexavalent Chromium
135-CC32A-12.0-12.5	JC2781-9,9R	Soil	Hexavalent Chromium
135-CC32A-14.0-14.5	JC2781-10,10R	Soil	Hexavalent Chromium
135-CC32A-15.5-16.0	JC2781-11,11R	Soil	Hexavalent Chromium
135-CC32A-16.0-16.5	JC2781-12,12R	Soil	Hexavalent Chromium
135-CC32A-2.0-2.5	JC2781-3,3R	Soil	Hexavalent Chromium
135-CC32A-4.0-4.5	JC2781-4,4R	Soil	Hexavalent Chromium
135-CC32A-4.0-4.5X (Field Duplicate of 135-CC32A-4.0-4.5)	JC2781-5,5R	Soil	Hexavalent Chromium
135-CC32A-6.0-6.5	JC2781-6,6R	Soil	Hexavalent Chromium
135-DD30A-0.5-1.0	JC2781-13,13R	Soil	Hexavalent Chromium
135-DD30A-10.5-11.0	JC2781-18,18R	Soil	Hexavalent Chromium
135-DD30A-12.5-13.0	JC2781-19,19R	Soil	Hexavalent Chromium
135-DD30A-14.5-15.0	JC2781-20,20R	Soil	Hexavalent Chromium
135-DD30A-15.4-15.9	JC2781-21,21R	Soil	Hexavalent Chromium
135-DD30A-15.9-16.4	JC2781-22,22R	Soil	Hexavalent Chromium
135-DD30A-2.5-3.0	JC2781-14,14R	Soil	Hexavalent Chromium
135-DD30A-4.5-5.0	JC2781-15,15R	Soil	Hexavalent Chromium
135-DD30A-6.5-7.0	JC2781-16,16R	Soil	Hexavalent Chromium
135-DD30A-8.5-9.0	JC2781-17,17R	Soil	Hexavalent Chromium
135-EE27A-1.2-1.7	JC2781-23,23R	Soil	Hexavalent Chromium
135-EE27A-10.0-10.5	JC2781-29,29R	Soil	Hexavalent Chromium
135-EE27A-12.0-12.5	JC2781-30,30R	Soil	Hexavalent Chromium
135-EE27A-14.0-14.5	JC2781-31,31R	Soil	Hexavalent Chromium
135-EE27A-15.7-16.2	JC2781-32,32R	Soil	Hexavalent Chromium
135-EE27A-16.2-16.7	JC2781-33,33R	Soil	Hexavalent Chromium
135-EE27A-2.0-2.5	JC2781-24,24R	Soil	Hexavalent Chromium
135-EE27A-4.0-4.5	JC2781-25,25R	Soil	Hexavalent Chromium
135-EE27A-4.0-4.5X (Field Duplicate of sample 135-EE27A-4.0-4.5)	JC2781-26,26R	Soil	Hexavalent Chromium

Field ID	Laboratory ID	Matrix	Fraction
135-EE27A-6.0-6.5	JC2781-27,27R	Soil	Hexavalent Chromium
135-EE27A-8.0-8.5	JC2781-28,28R	Soil	Hexavalent Chromium
135-FB20150901 (Equipment Blank)	JC2781-2	Aqueous	Hexavalent Chromium

The samples were collected following the procedures detailed in the Remedial Investigation Work Plan - Soil for Non-Residential Chromate Chemical Production Waste Sites 114, 132, 133, 135, 137, 143, and 186, Jersey City, New Jersey, or applicable proposal or work plan, and the Field Sampling Plan/Quality Assurance Project Plan for Non-Residential and Residential Chromium Sites Hudson County, New Jersey (December 2011).

General Comments

The data package was complete. Quality control (QC) issues identified during validation are discussed below. Refer to the Target Analyte Summary Hit(s) in Attachment A for a listing of all detected results, qualified results, and associated qualifications, where applicable. The nonconformances for each section discussed below are presented in Attachment B.

Hexavalent Chromium

MS Results

There were two matrix spike (MS) samples associated with the soil samples in this SDG and used for supporting data quality recommendations:

- 135-CC32A-16.0-16.5 (JC2781-12): Initial batch GP91785/GN32054, Reanalysis batch GP91882/GN32203, samples JC2781-1 and JC2781-3 through JC2781-15 (inclusive); and

- 135-EE27A-16.2-16.7 (JC2781-33):Initial batch GP91787/GN32043, Reanalysis batch GP91935/GN32349, samples JC2781-16 through JC2781-33 (inclusive)

135-CC32A-16.0-16.5

Sample 135-CC32A-16.0-16.5 (JC2781-12) was selected for the soil matrix spike (MS) analysis and used for supporting data quality recommendations. The soluble and insoluble MS recoveries from the initial batch were 2.2% and 17.1% respectively. The MS recoveries did not meet the quality control (QC) criteria of 75-125%R, and were less than 50%. The post digestion spike (PDS) recovery was 58%, and after pH adjustment was 50%, which did not meet the PDS criteria of 85-115%.

Based on the very low MS and PDS recoveries, often an indication that Method 7199 may be more successful in producing improved MS recovery, the MS and soil samples were reanalyzed using Method 7199. The soluble and insoluble MS results from the reanalysis by method 7199 were 22.9% and 33.4%; respectively. The MS recoveries did not meet the quality control (QC) criteria of 75-125%R, and were less than 50%. The PDS result was 98.6%, which was within the QC criteria of 85-115%.

Since the MS failed to meet QC criteria, additional parameters were analyzed to determine if possible matrix interferences could be the cause for the poor MS recoveries. The soil samples were tested for pH and oxidation reduction potential (ORP), and plotted on an Eh/pH phase diagram.

From this chart, the source sample for the MS analysis of sample 135-CC32A-16.0-16.5 (JC2781-12) was plotted below the phase change line, indicating reducing potential within the sample matrix, incapable of supporting hexavalent chromium. Ferrous iron, sulfide screen, and total organic carbon (TOC) were performed on this MS source sample to confirm the oxidizing/ reducing potential within the sample matrix. The sulfide screen was reported as nondetect, indicating no reducing agents within the sample matrix; however, the ferrous iron (1.6%) and the TOC results (128,000 mg/Kg) were positive, indicating potential reducing agents within the sample matrix.

Since both soluble and insoluble MS recoveries were less than 50% in the initial analysis by method 7196 and reanalysis by method 7199, the highest detected hexavalent chromium result or the nondetect hexavalent chromium result with the lowest RL was reported for each sample. As a result of MS recoveries less than 50%, the soil hexavalent chromium results for all samples in this SDG were rejected (RA).

No further qualification was taken based on the low initial PDS recovery since the reanalysis PDS %R was acceptable.

135-EE27A-16.2-16.7

Sample 135-EE27A-16.2-16.7 (JC2781-33) was selected for the soil MS analysis and used for supporting data quality recommendations. The soluble and insoluble MS recoveries from the initial batch were -0.4% and 13.1% respectively, which did not meet the QC criteria of 75-125%R, and were both less than 50%. The PDS recovery was 50.4%, and after pH adjustment was 66.1%, which did not meet the PDS criteria of 85-115%.

Based on the very low MS and PDS recoveries, often an indication that Method 7199 may be more successful in producing improved MS recovery, the MS and soil samples were reanalyzed using Method 7199. The soluble and insoluble MS results from the reanalysis by method 7199 were 17.5% and 43.3%; respectively, which did not meet the QC criteria of 75-125%R, and were both less than 50%. The PDS result was 100%, which was within the QC criteria of 85-115%.

Since the MS failed to meet QC criteria, additional parameters were analyzed to determine if possible matrix interferences could be the cause for the poor MS recoveries. The soil samples were tested for pH and oxidation reduction potential (ORP), and plotted on an Eh/pH phase diagram. From this chart, the source sample for the MS analysis of sample 135-EE27A-16.2-16.7 (JC2781-33) was plotted below the phase change line, indicating reducing potential within the sample matrix, incapable of supporting hexavalent chromium. Ferrous iron, sulfide screen, and total organic carbon (TOC) were performed on this MS source sample to confirm the oxidizing/ reducing potential within the sample matrix. The sulfide screen was reported as nondetect, indicating no reducing agents within the sample matrix; however, the ferrous iron (1.2%) and the TOC results (124,000 mg/Kg) were positive, indicating potential reducing agents within the sample matrix.

Since both soluble and insoluble MS recoveries were less than 50% in the initial analysis by method 7196 and reanalysis by method 7199, the highest detected hexavalent chromium result or the nondetect hexavalent chromium result with the lowest RL was reported for each sample. As a result of MS recoveries less than 50%, the soil hexavalent chromium results for all samples in this SDG were rejected (RA).

No further qualification was taken based on the low initial PDS recovery since the reanalysis PDS %R was acceptable.

Laboratory Duplicate Precision

There were two samples selected by the laboratory to demonstrate laboratory precision capabilities:

- 135-CC32A-16.0-16.5 (JC2781-12): Initial batch GP91785/GN32054, Reanalysis batch GP91882/GN32203, samples JC2781-1 and JC2781-3 through JC2781-15 (inclusive); and

- 135-EE27A-16.2-16.7 (JC2781-33):Initial batch GP91787/GN32043, Reanalysis batch GP91935/GN32349, samples JC2781-16 through JC2781-33 (inclusive)

In the initial analysis run for sample 135-CC32A-16.0-16.5 (JC2781-12) the RPD exceeded the QC criteria of 20%. The sample and duplicate results were less than 4 times the RL and the absolute difference was less than the RL; therefore, no qualifications were applied on the basis of laboratory duplicate precision.

In the initial analysis run for sample 135-EE27A-16.2-16.7 (JC2781-33) the RPD was not calculable since the duplicate result was nondetected. The detected result for the parent sample was less than 4 times the RL; therefore, no qualifications were applied on the basis of laboratory duplicate precision.

7199 Replicate Precision

The 7199 replicate analysis RPDs for several samples exceeded the QC criteria of ≤ 20%. Professional judgment was used to accept the results since the individual concentrations were all very low. However, since the RPD for sample 135-EE27A-4.0-4.5 (JC2781-25) was greater than 100%, the result was considered estimated (UJ). The RPD for sample 135-CC32A-16.0-16.5 (JC2781-12) was also greater than 100%; however, the 7199 results were not reported,

Refer to the nonconformance tables in Attachment B for a listing of sample replicate RPDs.

Field Duplicate Results

The samples making up the two field duplicate (FD) pairs in this SDG were 135-CC32A-4.0-4.5 (JC2781-4)/135-CC32A-4.0-4.5X (JC2781-5) and 135-EE27A-4.0-4.5 (JC2781-25) / (JC2781-26). In both cases, both FD results were reported from the 7199 reanalysis; therefore, the RPD was calculated from those results. The RPDs met the 50% QC criteria; thus no qualifications were necessary.

Percent Solids

The moisture content for samples 135-DD30A-15.9-16.4 (JC2781-22) and 135-EE27A-16.2-16.7 (JC2781-33) exceeded the acceptable limit of 50% and thus the sample results were qualified (J) as estimated.

Sample Results

Reported results (flagged B by the laboratory) less than the RL, but greater than or equal to the method detection limit (MDL), are approximate values and have been qualified as estimated (J).

Data Quality and Usability

The hexavalent chromium results for all soil samples were rejected; however, the results may be usable for project objectives as discussed below. Detected, qualified, and rejected results are presented in Attachments A and B.

Based on the initial and reanalysis soluble and insoluble recoveries for both of the MS associated with this data set, the hexavalent chromium results for all soil samples were rejected. However, based on the reducing potential of the sample matrix shown by the Eh/pH phase diagram and the additional ancillary parameters, there is evidence to suggest that the matrix was reducing and not capable of supporting hexavalent chromium. Therefore, even though the sample results were rejected based on MS %Rs, the results may be usable for site decisions as estimated values with potential low bias. The highest detected hexavalent chromium result or the nondetect hexavalent chromium result with the lowest RL between the initial analysis and reanalysis was reported for the soil samples.

The following additional issues were noted for this sample set:

- Replicate Method 7199 injections for several samples did not meet the 20% RPD limit (see table of 7199 Replicate RPDs in Attachment B);

- Sample results reported between the MDL and RL, and/or qualified due to high percent moisture content are considered estimated values with an unknown directional bias.

ATTACHMENTS

Attachment A: Target Analyte Summary Hitlist(s)

Attachment B: Data Validation Report Form

Attachment A

Target Analyte Summary Hitlist(s)

Soil Target Analyte Summary Hit List (Hexavalent Chromium)

Site Name Narula Site 135 PDI Soil Sampling
Sampling Date September 1, 2015
Lab Name/ID Accutest, Dayton, NJ
SDG No JC2781 and JC2781R
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID 135-FB20150901

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-CC32A-16.0-16.5	JC2781-12	CHROMIUM (HEXAVALENT)	U	0.87	RA	0.78	Reject	1
135-DD30A-15.9-16.4	JC2781-22	CHROMIUM (HEXAVALENT)	U	0.68B	RA	0.90	Reject	1,2,3
135-EE27A-16.2-16.7	JC2781-33	CHROMIUM (HEXAVALENT)	U	1.3	RA	1.0	Reject	1,2
1325-CC32A-8.0-8.5	JC2781-7R	CHROMIUM (HEXAVALENT)	U	0.26B	RA	0.48	Reject	1,3
135-CC32A-1.0-1.5	JC2781-1R	CHROMIUM (HEXAVALENT)	U	5.2	RA	0.46	Reject	1
135-CC32A-10.0-10.5	JC2781-8R	CHROMIUM (HEXAVALENT)	U	0.54	RA	0.45	Reject	1
135-CC32A-12.0-12.5	JC2781-9R	CHROMIUM (HEXAVALENT)	U	0.74	RA	0.48	Reject	1
135-CC32A-14.0-14.5	JC2781-10R	CHROMIUM (HEXAVALENT)	U	U	RA	0.48	Reject	1
135-CC32A-15.5-16.0	JC2781-11R	CHROMIUM (HEXAVALENT)	U	0.70	RA	0.49	Reject	1
135-CC32A-2.0-2.5	JC2781-3R	CHROMIUM (HEXAVALENT)	U	U	RA	0.47	Reject	1,4
135-CC32A-4.0-4.5	JC2781-4R	CHROMIUM (HEXAVALENT)	U	0.32B	RA	0.47	Reject	1,3
135-CC32A-4.0-4.5X	JC2781-5R	CHROMIUM (HEXAVALENT)	U	0.32B	RA	0.47	Reject	1,3
135-CC32A-6.0-6.5	JC2781-6R	CHROMIUM (HEXAVALENT)	U	0.65	RA	0.47	Reject	1
135-DD30A-0.5-1.0	JC2781-13R	CHROMIUM (HEXAVALENT)	U	18.6	RA	0.44	Reject	1
135-DD30A-10.5-11.0	JC2781-18R	CHROMIUM (HEXAVALENT)	U	0.34B	RA	0.48	Reject	1,3
135-DD30A-12.5-13.0	JC2781-19R	CHROMIUM (HEXAVALENT)	U	U	RA	0.48	Reject	1
135-DD30A-14.5-15.0	JC2781-20R	CHROMIUM (HEXAVALENT)	U	U	RA	0.47	Reject	1
135-DD30A-15.4-15.9	JC2781-21R	CHROMIUM (HEXAVALENT)	U	U	RA	0.50	Reject	1
135-DD30A-2.5-3.0	JC2781-14R	CHROMIUM (HEXAVALENT)	U	U	RA	0.45	Reject	1,4

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-DD30A-4.5-5.0	JC2781-15R	CHROMIUM (HEXAVALENT)	U	U	RA	0.57	Reject	1,4
135-DD30A-6.5-7.0	JC2781-16R	CHROMIUM (HEXAVALENT)	U	0.55	RA	0.45	Reject	1
135-DD30A-8.5-9.0	JC2781-17R	CHROMIUM (HEXAVALENT)	U	0.15B	RA	0.50	Reject	1,3
135-EE27A-1.2-1.7	JC2781-23R	CHROMIUM (HEXAVALENT)	U	U	RA	0.47	Reject	1,4
135-EE27A-10.0-10.5	JC2781-29R	CHROMIUM (HEXAVALENT)	U	0.35B	RA	0.49	Reject	1,3
135-EE27A-12.0-12.5	JC2781-30R	CHROMIUM (HEXAVALENT)	U	0.32B	RA	0.46	Reject	1,3
135-EE27A-14.0-14.5	JC2781-31R	CHROMIUM (HEXAVALENT)	U	0.23B	RA	0.45	Reject	1,3
135-EE27A-15.7-16.2	JC2781-32R	CHROMIUM (HEXAVALENT)	U	0.19B	RA	0.48	Reject	1,3,4
135-EE27A-2.0-2.5	JC2781-24R	CHROMIUM (HEXAVALENT)	U	0.36B	RA	0.51	Reject	1,3
135-EE27A-4.0-4.5	JC2781-25R	CHROMIUM (HEXAVALENT)	U	U	RA	0.48	Reject	1,3,4
135-EE27A-4.0-4.5X	JC2781-26R	CHROMIUM (HEXAVALENT)	U	U	RA	0.46	Reject	1,4
135-EE27A-6.0-6.5	JC2781-27R	CHROMIUM (HEXAVALENT)	U	U	RA	0.54	Reject	1
135-EE27A-8.0-8.5	JC2781-28R	CHROMIUM (HEXAVALENT)	U	0.50	RA	0.45	Reject	1

Note: A “U” under Method Blank column indicates a nondetect result.
A “U” under the Laboratory Sample Result and Validation Sample Result columns indicates a nondetect result at the RL.

NJDEP Laboratory Footnote

1. The reported positive or nondetected value was rejected (RA) because both the soluble and insoluble the matrix spike recoveries were less than 50% in the initial and reanalysis.

2. The reported value was qualified (J/UJ) because the sample moisture content exceeded 50%.

3. The reported result was greater than the MDL but less than the RL and qualified (J) as estimated.

4. The reported value was estimated (J/UJ) because the 7199 replicate RPD was greater than 20%.

Attachment B

Data Validation Report Form

Client Name: PPG Industries	Project Number: 60314351.GA.DE.PDI.P3
Site Location: Narula Site 135 PDI Soil Sampling, Jersey City, NJ	Project Manager: Scott Mikaelian
Laboratory: Accutest, Dayton, NJ	Type of Validation: Full
Laboratory Job No: JC2781 and JC2781R	Date Checked: 9/23/15
Validator: Sharon McKechnie	Peer: Mary Kozik

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X			
Field I.D. included?	X			
Laboratory I.D. included?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6C?	X			
Signed COCs included?	X			
Date of sample collection included?	X			
Date of sample digestion included?	X			
Holding time to digestion met criteria? (Soils -30 days from collection to digestion.)	X			
Date of analysis included?	X			
Holding time to analysis met criteria? (Soils -168 hours from digestion to analysis; Aqueous - 24 hours from collection to analysis.	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			

Definitions: MDL Method Detection Limit; %R Percent Recovery; RL Reporting Limit; RPD Relative Percent Difference; RSD Relative Standard Deviation: Corr Correlation Coefficient.

ITEM	YES	NO	N/A	COMMENTS
Initial calibration documentation included in lab package?	X			
1) Blank plus 4 standards (7196A) or blank plus 3 standards (7199)	X			
2) Correlation coefficient of =0.995 (7196A) or =0.999 (7199)	X			
3) Calibrate daily or each time instrument is set up.	X			
Calibration Check Standard (CCS) for 7196A and Quality Control Sample (QCS) for 7199 Included in Lab Package?	X			
1) %R criteria met? (90 - 110%)	X			
2) Correct frequency of one per every 10 samples	X			
3) CCS and QCS from independent source and at mid-level of calibration curve	X			
Calibration Blanks	X			
1) Analyzed prior to initial calibration standards and after each CCS/QCS?	X			
2) Absolute value should not exceed MDL.	X			
Method Blank, Field Blanks and/or Equipment Blanks Included in Lab Package?	X			
1) Method blank analyzed with each preparation batch?	X			
2) Absolute value should not exceed MDL.	X			
Eh and pH Data	X			
1) Eh and pH data was included and plotted for all samples?	X			
Soluble Matrix Spike Data Included in Lab Package?	X			JC2781-12 and JC2781-33
1) Soluble Matrix %R criteria met? (75-125%R).		X		See nonconformance table
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?		X		JC2781-12 Initial and rerun spiked at 80.4 mg/kg and 78.1 mg/kg, respectively .The data was not affected. JC2781-33Initial and rerun spiked at 103 mg/kg and 108 mg/kg, respectively .The data was not affected.
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			

ITEM	YES	NO	N/A	COMMENTS
Insoluble Matrix Spike Data Included in Lab Package?	X			JC2781-12 and JC2781-33
1) Insoluble Matrix %R criteria met? (75-125%R).		X		See nonconformance table
2) Was the spike concentration around 400 to 800 mg/Kg?		X		JC2781-12 Initial and rerun spiked at 1690 mg/kg and 1820 mg/kg, respectively .The data was not affected. JC2781-33 Initial and rerun spiked at 2510 mg/kg and 2570 mg/kg, respectively .The data was not affected.
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Post Digestion Spike	X			JC2781-12 and JC2781-33
1) Post Digestion Spike %R criteria met? (85-115%R).	X			See tables
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?	X			
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Sample Duplicate Data Included in Lab Package?	X			JC2781-12 and JC2781-33
1) RPD criteria met? (RPD $\leq$ 20%) if both results are ≥4x RL or absolute difference $\leq$ RL if either or both results are <4xRL	X			See tables
2) Was a sample duplicate analyzed at the frequency of 1 per batch or 20 samples?	X			
Was a Laboratory Control Sample (LCS) Included in Lab Package?	X			
1) %R criteria met? (80-120%R).	X			
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples?	X			
Were any Field Duplicate samples submitted with this SDG?	X			JC2781-4/JC2781-5 and JC2781-25/JC2781-26
11) Were Field duplicate RPD criteria met? (RPD$\leq$50% for both sample results >5xRL or absolute difference $\leq$ RL if either or both results are <5xRL.	X			See tables
Were all sample quantitation and reporting requirements met?	X			

ITEM	YES	NO	N/A	COMMENTS
1) Were all solid samples reported with percent solids > 50%?		X		See nonconformance table
2) Were any samples analyzed or reported with dilutions?	X			up to 5x
Miscellaneous Items	X			
1) For soils by 7196A, was the pH within a range of 7.0-8.0?	X			
2) For soils by 7199, was the pH within a range of 9.0-9.5?	X			
3) For aqueous by 7196A, was the pH with a range of 1.5-2.5?	X			
4) For soils (3060A), was the digestion temperature 90-95C for at least 60 minutes?	X			
5) For 7199, was each sample injected twice and was the RPD ≤20?	X			See table

Matrix Spikes

Sample ID	Lab ID	Analyte	Matrix Spike	% Recovery	Lower Limit	Upper Limit
135-CC32A-16.0-16.5	JC2781-12	CHROMIUM (HEXAVALENT)	Soluble	2.2	75	125
135-CC32A-16.0-16.5	JC2781-12	CHROMIUM (HEXAVALENT)	Insoluble	17.1	75	125
135-CC32A-16.0-16.5	JC2781-12R	CHROMIUM (HEXAVALENT)	Soluble	22.9	75	125
135-CC32A-16.0-16.5	JC2781-12R	CHROMIUM (HEXAVALENT)	Insoluble	33.4	75	125
135-EE27A-16.2-16.7	JC2781-33	CHROMIUM (HEXAVALENT)	Soluble	-0.4	75	125
135-EE27A-16.2-16.7	JC2781-33	CHROMIUM (HEXAVALENT)	Insoluble	13.1	75	125
135-EE27A-16.2-16.7	JC2781-33R	CHROMIUM (HEXAVALENT)	Soluble	17.5	75	125
135-EE27A-16.2-16.7	JC2781-33R	CHROMIUM (HEXAVALENT)	Insoluble	43.3	75	125

Post Digestion Spikes

Sample ID	Lab ID	Compound	Analysis Batch	% Recovery	pH Adjusted % Recovery	Lower Limit	Upper Limit
135-CC32A-16.0-16.5	JC2781-12	CHROMIUM (HEXAVALENT)	Initial	58	50	85	115
135-CC32A-16.0-16.5	JC2781-12R	CHROMIUM (HEXAVALENT)	Reanalysis	98.6	NA	85	115
135-EE27A-16.2-16.7	JC2781-33	CHROMIUM (HEXAVALENT)	Initial	50.4	66.1	85	115
135-EE27A-16.2-16.7	JC2781-33R	CHROMIUM (HEXAVALENT)	Reanalysis	100	NA	85	115

Laboratory Duplicate

Sample ID	Lab ID	Analyte	Sample Result (mg/kg)	Duplicate Result (mg/kg)	QL (mg/kg)	RPD (%)	Action
135-CC32A-16.0-16.5	JC2781-12	CHROMIUM (HEXAVALENT)	0.87	1.1	0.78	23.4	Accept (See Memo)
135-EE27A-16.2-16.7	JC2781-33	CHROMIUM (HEXAVALENT)	1.3	ND	1.0	NC	Accept (See Memo)

ND – Not detected NC – Not calculable

Hexavalent Chromium Field Duplicate

Sample ID	Duplicate ID	Sample Result (mg/kg)	QL (mg/kg)	Duplicate Result (mg/kg)	QL (mg/kg)	RPD (%)	Action
135-CC32A-4.0-4.5	135-CC32A-4.0-4.5X	0.32 B	0.47	0.32 B	0.47	0	Accept
135-EE27A-4.0-4.5	135-EE27A-4.0-4.5X	0.13 U	0.46	0.13 U	0.48	0	Accept

7199 Replicate RPDs

Sample ID	Rep 1 (ppm)	Rep 2 (ppm)	RPD%	RPD Criteria ≤20
JC2781-1	0.11137	0.11094	0.4%	OK
JC2781-3	0.00113	0.00085	28.3%	>20%, Accept (See Memo)
JC2781-4	0.00682	0.00669	1.9%	OK
JC2781-5	0.00678	0.00676	0.3%	OK
JC2781-6	0.01399	0.01323	5.6%	OK
JC2781-7	0.00520	0.00532	2.3%	OK
JC2781-8	0.01221	0.01137	7.1%	OK
JC2781-9	0.01426	0.01536	7.4%	OK
JC2781-10	0.00201	0.00208	3.4%	OK
JC2781-11	0.01420	0.01321	7.2%	OK
JC2781-12	0.00098	0.00774	155.0%	>20%, NA, 7196 result was reported
JC2781-13	0.42409	0.42401	0.02%	OK
JC2781-14	0.00112	0.00089	22.9%	>20%, Accept (See Memo)
JC2781-15	0.00139	0.00101	31.7%	>20%, Accept (See Memo)
JC2781-16	0.01166	0.01150	1.4%	OK
JC2781-17	0.00254	0.00246	3.2%	OK
JC2781-18	0.00705	0.00649	8.3%	OK
JC2781-19	0.00050	0.00053	5.8%	OK
JC2781-20	0.00193	0.00218	12.2%	OK
JC2781-21	0.00000	0.00000	0	OK
JC2781-22	0.00712	0.00659	7.7%	OK
JC2781-23	0.00071	0.00058	20.2%	>20%, Accept (See Memo)
JC2781-24	0.00720	0.00721	0.1%	OK
JC2781-25	0.00006	0.00024	120.0%	>20%, Estimate (J/UJ) (See Memo)
JC2781-26	0.00086	0.00065	27.8%	>20%, Accept (See Memo)
JC2781-27	0.00000	0.00000	0	OK
JC2781-28	0.01081	0.01112	2.8%	OK
JC2781-29	0.00669	0.00688	2.8%	OK
JC2781-30	0.00706	0.00720	2.0%	OK
JC2781-31	0.00493	0.00471	4.6%	OK
JC2781-32	0.00418	0.00331	23.2%	>20%, Accept (See Memo)
JC2781-33	0.00359	0.00292	20.6%	>20%, NA, 7196 result was reported

Percent Solids

Sample ID	Percent Solids (%)	Status
135-CC32A-8.0-8.5	82.2	ok @50%
135-CC32A-1.0-1.5	85.7	ok @50%
135-CC32A-10.0-10.5	87.9	ok @50%
135-CC32A-12.0-12.5	85.9	ok @50%
135-CC32A-14.0-14.5	81.2	ok @50%
135-CC32A-15.5-16.0	79.6	ok @50%

Sample ID	Percent Solids (%)	Status
135-CC32A-16.0-16.5	51	ok @50%
135-CC32A-2.0-2.5	87.3	ok @50%
135-CC32A-4.0-4.5	85.7	ok @50%
135-CC32A-4.0-4.5X	84.6	ok @50%
135-CC32A-6.0-6.5	82.7	ok @50%
135-DD30A-0.5-1.0	91.8	ok @50%
135-DD30A-10.5-11.0	82.1	ok @50%
135-DD30A-12.5-13.0	82.8	ok @50%
135-DD30A-14.5-15.0	85.5	ok @50%
135-DD30A-15.4-15.9	80.3	ok @50%
135-DD30A-15.9-16.4	44.5	<50%, Estimate (J/UJ)
135-DD30A-2.5-3.0	85.9	ok @50%
135-DD30A-4.5-5.0	72.2	ok @50%
135-DD30A-6.5-7.0	87	ok @50%
135-DD30A-8.5-9.0	81.8	ok @50%
135-EE27A-1.2-1.7	86.4	ok @50%
135-EE27A-10.0-10.5	81.5	ok @50%
135-EE27A-12.0-12.5	82.9	ok @50%
135-EE27A-14.0-14.5	84.6	ok @50%
135-EE27A-15.7-16.2	83.4	ok @50%
135-EE27A-16.2-16.7	38.2	<50%, Estimate (J/UJ)
135-EE27A-2.0-2.5	76.4	ok @50%
135-EE27A-4.0-4.5	83.7	ok @50%
135-EE27A-4.0-4.5X	84	ok @50%
135-EE27A-6.0-6.5	74.2	ok @50%
135-EE27A-8.0-8.5	85.9	ok @50%

SDG#: JC2781/ Method 7196	x - concentration	y - response
Batch: GN32054		
Cr+6 ICAL 09/9/15	0	0.001
Soil	0.01	0.01
(p. 112 of data pkg)	0.05	0.044
	0.1	0.090
Samples 1 and 3-15	0.3	0.259
	0.5	0.428
	0.8	0.676
	1	0.827

				(p. 112 of data pkg)
AECOM Calculated Offset	0.0050	OK	Reported Offset	0.0050
AECOM Slope	0.8316	OK	Reported Slope	0.8316
AECOM Calculated r	0.99984	OK	Reported r	0.99984

LCS calculation	**GP91785-B1**	**P. 75,112**		
Background Absorbance	0			
Total absorbance	0.806			
Total absorbance - background	0.806			
Instrument Concentration	0.963			
Sample weight (mg/kg)	0.0025			
Final Volume (L)	0.1			
Dilution Factor	1			
AECOM Calculated LCS Result (mg/Kg)	38.5	OK	Reported Result (mg/Kg)	38.5

%R = Found/True*100	**GP91785-B1**	**P. 75,112**		
True Value (mg/kg)	40			
AECOM Calculated %R	96.3	OK	Reported %R	96.3

MS calculation	**GP91785-S1**	**P. 77,112**	**JC2781-12**	
Background reading	0.053			
Total absorbance	0.085			
Total absorbance - background	0.032			
Instrument Concentration	0.0325			
Sample weight (mg/kg)	0.00244			
Final Volume (L)	0.1			
Percent solids	0.51			
Dilution Factor	1			
AECOM Calculated MS Result (mg/Kg)	2.6	OK	Reported Result (mg/Kg)	2.6

%R = Found/True*100	**GP91785-S1**	**P. 77,112**	**JC2781-12**	
True Value (mg/kg)	80.4			
Native concentration (mg/Kg)	0.87			
AECOM%R	2.2	OK	Reported %R	2.2

Percent Solids	**JC2781-12**	**P. 79**	**135-CC32A-16.0-16.5**	
Empty dish weight=	17.2			
Wet weight=	23.97			
Dry weight=	20.65			
AECOM %solids =	51	OK	reported %solids=	51

Reporting Limit	**JC2781-12**	**P.25,112**	**135-CC32A-16.0-16.5**	
Low Standard	0.01			
Initial weight (mg/kg)	0.00250			
Final volume (L)	0.1			
Percent solids	0.51			
Dilution Factor	1			
Reporting Limit	0.78	OK	Reported RL (mg/Kg)=	0.78

Sample Calculations	**JC2781-12**	**P.25,112**	**135-CC32A-16.0-16.5**	
Background reading	0.039			
Total absorbance	0.053			
Total absorbance - background	0.014			
Instrument Response	0.011			
Sample weight (mg/kg)	0.00244			
Final Volume (L)	0.1			
Percent solids	0.51			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.87	OK	Reported Result (mg/Kg)	0.87

SDG#: JC2781/ Method 7196	x - concentration	y - response
Batch: GN32043		
Cr+6 ICAL 09/7/15	0	0.001
Soil	0.01	0.01
(p. 103 of data pkg)	0.05	0.044
	0.1	0.090
Samples 16-33	0.3	0.257
	0.5	0.425
	0.8	0.657
	1	0.817

				(p. 103 of data pkg)
AECOM Calculated Offset	0.0059	OK	Reported Offset	0.0059
AECOM Slope	0.8167	OK	Reported Slope	0.8167
AECOM Calculated r	0.99982	OK	Reported r	0.99982

LCS calculation	**GP91787-B1**	**P. 75,103**		
Background Absorbance	0			
Total absorbance	0.761			
Total absorbance - background	0.761			
Instrument Concentration	0.925			
Sample weight (mg/kg)	0.0025			
Final Volume (L)	0.1			
Dilution Factor	1			
AECOM Calculated LCS Result (mg/Kg)	37	OK	Reported Result (mg/Kg)	37

%R = Found/True*100	**GP91787-B1**	**P. 75,103**		
True Value (mg/kg)	40			
AECOM Calculated %R	92.5	OK	Reported %R	92.5

MS calculation	**GP91787-S1**	**P. 77,103**	**JC2781-33**	
Background reading	0.031			
Total absorbance	0.044			
Total absorbance - background	0.013			
Instrument Concentration	0.0087			
Sample weight (mg/kg)	0.00253			
Final Volume (L)	0.1			
Percent solids	0.382			
Dilution Factor	1			
AECOM Calculated MS Result (mg/Kg)	0.90	OK	Reported Result (mg/Kg)	0.90

%R = Found/True*100	**GP91787-S1**	**P. 77,103**	**JC2781-33**	
True Value (mg/kg)	103			
Native concentration (mg/Kg)	1.3			
AECOM%R	-0.4	OK	Reported %R	-0.4

Percent Solids	**JC2781-29**	**P. 82**	**135-EE27A-10.0-10.5**	
Empty dish weight=	24.5			
Wet weight=	30.27			
Dry weight=	29.2			
AECOM %solids =	81.5	OK	reported %solids=	81.5

Reporting Limit	**JC2781-33**	**P.46,106**	**135-EE27A-16.2-16.7**	
Low Standard	0.01			
Initial weight (mg/kg)	0.00250			
Final volume (L)	0.1			
Percent solids	0.382			
Dilution Factor	1			
Reporting Limit	1.0	OK	Reported RL (mg/Kg)=	1.0

Sample Calculations	**JC2781-33**	**P.46,103**	**135-EE27A-16.2-16.7**	
Background reading	0.028			
Total absorbance	0.044			
Total absorbance - background	0.016			
Instrument Response	0.012			
Sample weight (mg/kg)	0.00247			
Final Volume (L)	0.1			
Percent solids	0.382			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	1.3	OK	Reported Result (mg/Kg)	1.3

SDG: JC2781R/ Method 7199 **Batch GN32203**	x - concentration	y - response (area) mAU*min	
Cr+6 ICAL 09/11/15	0.00	0.0042	STDA
Soil	0.005	0.047	STDB
(p. 108-113 of data package)	0.05	0.430	STDC
	0.1	0.885	STDD
Samples 1 and 3-15	0.5	4.3555	STDE

				(p. 108-113 of data package)
AECOM Calculated Offset	0.0039	OK	Reported Offset	0.0039
AECOM Slope	8.7054	OK, rounding	Reported Slope	8.7055
AECOM Calculated r	1.0000	OK	Reported r	1.0000

LCS calculation	**GP91882-B1**	**P. 73,118**		
Highest replicate response (AREA, mAU*min)	2.193			
Instrument Concentration (ug/L)	0.251			
Sample weight	0.0025			
Percent solids	1			
Dilution Factor	4			
AECOM Calculated LCS Result (mg/Kg)	40.2	OK	Reported Result (mg/Kg)	40.2

%R = Found/True*100	**GP91882-B1**	**P. 73,118**		
True Value (mg/kg)	40			
AECOM Calculated %R	100.6	OK, rounding	Reported %R	100.5

MS calculation	**GP91882-S1**	**P. 75,127**	**JC2781-12**	
Highest replicate response (mAU*min)	0.40200			
Instrument Concentration (ug/L)	0.0457			
Sample weight	0.00251			
Percent solids	0.51			
Dilution Factor	5			
AECOM Calculated MS Result (mg/Kg)	17.9	OK	Reported Result (mg/Kg)	17.9

%R = Found/True*100	**GP91882-S1**	**P. 75,127**	**JC2781-12**	
True Value (mg/kg)	78.1			
Native concentration (mg/Kg)	0			
%R	22.9	OK	Reported %R	22.9

Percent Solids	**JC2781-12**	**P. 88**	**135-CC32A-16.0-16.5**	
Empty dish weight=	17.2			
Wet weight=	23.97			
Dry weight=	20.65			
AECOM %solids =	51.0	OK	reported %solids=	51.0

Reporting limit	**JC2781-1**	**P. 13,100**	**135-CC32A-1.0-1.5**	
Low Standard	0.01			
Initial weight (g)	0.00252			
Final volume (L)	0.1			
Percent solids	0.857			
Dilution Factor	1			
Reporting Limit	0.46	OK	Reported RL (mg/Kg)=	0.46

Sample Calculations	**JC2781-1**	**P. 13,110**	**135-CC32A-1.0-1.5**	
Background reading from highest response	0			
Instrument Response highest response	0.97300			
Total response for replicate 1	0.973			
Instrument Response (mg/L)	0.111			
Sample weight (mg)	0.00252			
Final Volume (L)	0.1			
Percent solids	0.857			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	5.2	OK	Reported Result (mg/Kg)	5.2

SDG: JC2781R/ Method 7199 **Batch GN32349**	x - concentration	y - response (area) mAU*min	
Cr+6 ICAL 09/13/15	0.00	0.0056	STDA
Soil	0.005	0.051	STDB
(p. 189-194 of data package)	0.05	0.429	STDC
	0.1	0.869	STDD
Samples 16-33	0.5	4.3137	STDE

				(p. 189-194 of data package)
AECOM Calculated Offset	0.0048	OK	Reported Offset	0.0048
AECOM Slope	8.6176	OK, rounding	Reported Slope	8.6177
AECOM Calculated r	1.0000	OK	Reported r	1.0000

LCS calculation	**GP91935-B1**	**P. 73,200**		
Highest replicate response (AREA, mAU*min)	2.153			
Instrument Concentration (ug/L)	0.249			
Sample weight	0.0025			
Percent solids	1			
Dilution Factor	4			
AECOM Calculated LCS Result (mg/Kg)	39.9	OK	Reported Result (mg/Kg)	39.9

%R = Found/True*100	**GP91935-B1**	**P. 73,200**		
True Value (mg/kg)	40			
AECOM Calculated %R	99.7	OK, rounding	Reported %R	99.8

MS calculation	**GP91935-S1**	**P. 75,276**
Calculated from another Cal Curve		

Percent Solids	**JC2781-18**	**P. 89**	**135-DD30A-10.5-11.0**	
Empty dish weight=	19.82			
Wet weight=	27.29			
Dry weight=	25.95			
AECOM %solids =	82.1	OK	reported %solids=	82.1

Reporting limit	**JC2781-18**	**P. 29,182**	**135-DD30A-10.5-11.0**	
Low Standard	0.01			
Initial weight (g)	0.00254			
Final volume (L)	0.1			
Percent solids	0.821			
Dilution Factor	1			
Reporting Limit	0.48	OK	Reported RL (mg/Kg)=	0.48

Sample Calculations	**JC2781-18**	**P. 29,230**	**135-DD30A-10.5-11.0**	
Background reading from highest response	0.003			
Instrument Response highest response	0.06900			
Total response for replicate 1	0.066			
Instrument Response (mg/L)	0.007			
Sample weight (mg)	0.00254			
Final Volume (L)	0.1			
Percent solids	0.821			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.34	OK	Reported Result (mg/Kg)	0.34

SDG: JC2781R/ Method 7199 **Batch GN32349**	x - concentration	y - response (area) mAU*min	
Cr+6 ICAL 09/13/15	0.00	0.0073	STDA
Soil	0.005	0.051	STDB
(p. 282-287 of data package)	0.05	0.445	STDC
	0.1	0.909	STDD
Sol MS for Samples 16-33	0.5	4.5153	STDE

				(p. 282-287 of data package)
AECOM Calculated Offset	0.0034	OK	Reported Offset	0.0034
AECOM Slope	9.0232	OK	Reported Slope	9.0232
AECOM Calculated r	1.0000	OK	Reported r	1.0000

MS calculation	**GP91935-S1**	**P. 75,292**	**JC2781-33**	
Highest replicate response (mAU*min)	0.31800			
Instrument Concentration (ug/L)	0.0349			
Sample weight	0.00243			
Percent solids	0.382			
Dilution Factor	5			
AECOM Calculated MS Result (mg/Kg)	18.8	OK	Reported Result (mg/Kg)	18.8

%R = Found/True*100	**GP91935-S1**	**P. 75,292**	**JC2781-33**	
True Value (mg/kg)	108			
Native concentration (mg/Kg)	0			
%R	17.4	OK, rounding	Reported %R	17.5

Percent Solids	**JC2781-33**	**P. 92**	**135-EE27A-16.2-16.7**	
Empty dish weight=	19.27			
Wet weight=	29.04			
Dry weight=	23			
AECOM %solids =	38.2	OK	reported %solids=	38.2

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Data Validation Report

Project:	Narula Site 135 PDI Soil Sampling	
Laboratory:	Accutest, Dayton, NJ	
Laboratory Job No.:	JC3801 and JC3801R	
Analysis/Method:	Hexavalent Chromium SW846 3060A/7196,7199	
Validation Level:	Full	
Site Location/Address:	Narula Site 135 PDI Sampling /Jersey City, NJ	
AECOM Project No:	60314351.GA.DE.PDI.P3	
Prepared by:	Sharon McKechnie /AECOM	Completed on: 10/06/2015
Reviewed by:	Mary Kozik/AECOM	File Name: JC3801_R_2015/10/06_DV Report-R

Introduction

The data were reviewed in accordance with the FSP-QAPP and the following NJDEP validation Standard Operating Procedures (SOP):

- NJDEP Office of Data Quality SOP 5.A.10, Rev 3 (September 2009), SOP for Analytical Data Validation of Hexavalent Chromium - for USEPA SW-846 Method 3060A, USEPA SW-846 Method 7196A and 7199

The results of quality control data analyzed with site samples were used to assess the overall reliability of the data. The following qualifiers were used to identify data quality issues:

U: Indicates the analyte was not detected in the sample above the sample reporting limit.

J: Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

UJ: Indicates the analyte was not detected above the reporting limit and the reporting limit was approximate.

UB: The analyte concentration is less than or equal to three (3) times the concentration in the associated method/prep blank. The presence of the analyte in the sample is negated (UB) due to laboratory contamination.

JB: The analyte concentration is greater than three (3) times, but less than or equal to ten (10) times the concentration in the associated method/prep blank. The presence of that analyte in the sample is considered "real". The concentration is quantitatively qualified (JB) due to method blank contamination.

R: The sample result was rejected due to serious deficiencies; the presence or absence of the analyte could not be confirmed.

RA: The sample result was rejected but is still considered usable.

Sample Information

The samples listed below were collected by AECOM on September 14, 2015, as part of the Narula Site 135 PDI Soil Sampling at the Jersey City, NJ site. Only the sample(s) and parameter(s) listed below were validated.

Field ID	Laboratory ID	Matrix	Fraction
135-FB201509014 (Equipment Blank)	JC3801-10	Aqueous	Hexavalent Chromium
135-FF23A-1.0-1.5	JC3801-1,1R	Soil	Hexavalent Chromium
135-FF23A-11.0-11.5	JC3801-7,7R	Soil	Hexavalent Chromium
135-FF23A-11.5-12.0	JC3801-8,8R	Soil	Hexavalent Chromium
135-FF23A-12.0-12.5	JC3801-9,9R	Soil	Hexavalent Chromium
135-FF23A-3.0-3.5	JC3801-2,2R	Soil	Hexavalent Chromium
135-FF23A-5.0-5.5	JC3801-3,3R	Soil	Hexavalent Chromium
135-FF23A-5.0-5.5X (Field Duplicate of sample 135-FF23A-5.0-5.5)	JC3801-4,4R	Soil	Hexavalent Chromium
135-FF23A-7.0-7.5	JC3801-5,5R	Soil	Hexavalent Chromium
135-FF23A-9.0-9.5	JC3801-6,6R	Soil	Hexavalent Chromium
135-FF24A-1.2-1.7	JC3801-14,14R	Soil	Hexavalent Chromium
135-FF24A-11.0-11.5	JC3801-16,16R	Soil	Hexavalent Chromium
135-FF24A-12.8-13.3	JC3801-18,18R	Soil	Hexavalent Chromium
135-FF24A-13.3-13.8	JC3801-17,17R	Soil	Hexavalent Chromium
135-FF24A-3.0-3.5	JC3801-15,15R	Soil	Hexavalent Chromium
135-FF24A-5.0-5.5	JC3801-11,11R	Soil	Hexavalent Chromium
135-FF24A-7.0-7.5	JC3801-12,12R	Soil	Hexavalent Chromium
135-FF24A-9.0-9.5	JC3801-13,13R	Soil	Hexavalent Chromium

The samples were collected following the procedures detailed in the Remedial Investigation Work Plan - Soil for Non-Residential Chromate Chemical Production Waste Sites 114, 132, 133, 135, 137, 143, and 186, Jersey City, New Jersey, or applicable proposal or work plan, and the Field Sampling Plan/Quality Assurance Project Plan for Non-Residential and Residential Chromium Sites Hudson County, New Jersey (December 2011).

General Comments

The data package was complete. Quality control (QC) issues identified during validation are discussed below. Refer to the Target Analyte Summary Hit(s) in Attachment A for a listing of all detected results, qualified results, and associated qualifications, where applicable. The nonconformances for each section discussed below are presented in Attachment B.

Hexavalent Chromium

MS Results

Sample 135-FF23A-12.0-12.5 (JC3801-9) was selected for the soil matrix spike (MS) analysis and used for supporting data quality recommendations. The soluble and insoluble MS recoveries from the initial batch were 0.5% and 1.0% respectively. Both MS recoveries did not meet the quality control (QC) criteria of 75-125%R, and were less than 50%. The PDS recovery was 32%, and after pH adjustment was 63%, which did not meet the PDS criteria of 85-115%.

Based on the very low MS and PDS recoveries, often an indication that Method 7199 may be more successful in producing improved MS recovery, the MS and soil samples were reanalyzed using Method 7199. The soluble and insoluble MS results from the reanalysis by method 7199 were 2.1% and 1.1%; respectively, which did not meet the QC criteria of 75-125%R, and were less than 50%. The PDS result was 100%, which was within the QC criteria of 85-115%.

Since the MS failed to meet QC criteria, additional parameters were analyzed to determine if possible matrix interferences could be the cause for the poor MS recoveries. The soil samples were tested for pH and oxidation reduction potential (ORP), and plotted on an Eh/pH phase diagram. From this chart, the source sample for the MS analysis of sample 135-FF23A-12.0-12.5 (JC3801-9) was plotted below the phase change line, indicating reducing potential within the sample matrix, incapable of supporting hexavalent chromium. Ferrous iron, sulfide screen, and total organic carbon (TOC) were performed on this MS source sample to confirm the oxidizing/ reducing potential within the sample matrix. The sulfide screen was reported as nondetect, indicating no reducing agents within the sample matrix; however, the ferrous iron (0.77%) and the TOC results (184,000 mg/Kg) were positive, indicating potential reducing agents within the sample matrix.

Since both soluble and insoluble MS recoveries were less than 50% in the initial analysis by method 7196 and reanalysis by method 7199, the highest detected hexavalent chromium result or the nondetect hexavalent chromium result with the lowest reporting limit (RL) was reported for each sample. As a result of MS recoveries less than 50%, all the soil hexavalent chromium results were rejected (RA).

No further qualification was taken based on the low initial analysis PDS recovery since the reanalysis PDS recovery was acceptable.

Laboratory Duplicate Precision

Sample 135-FF23A-12.0-12.5 (JC3801-9) was selected by the laboratory to demonstrate laboratory precision capabilities in this SDG:

The RPD was not calculable in the reanalysis since the duplicate sample was nondetect. The detected result in the parent sample was less than 4 times the RL; therefore, no qualifications were applied to the soil samples in this SDG on the basis of laboratory duplicate precision.

7199 Replicate Precision

The 7199 replicate analysis RPDs for sample 135-FF23A-12.0-12.5 (JC3801-9) exceeded the QC criteria of ≤ 20%; therefore, the result was qualified as estimated (J) on the basis of replicate precision.

The replicate RPDs for samples 135-FF23A-3.0-3.5 (JC3801-2) and 135-FF23A-5.0-5.5X (JC3801-4) were not calculable since the first injection results were nondetected and the second injection results were positive. Since the results for the second injection were very low in both cases, no qualifications were applied on the basis of replicate precision.

Refer to the nonconformance tables in Attachment B for a listing of sample replicate RPDs.

Field Duplicate Results

The samples making up the field duplicate (FD) pair in this SDG were 135-FF23A-5.0-5.5 (JC3801-3)/ 135-FF23A-5.0-5.5X (JC3801-4). The FD results were reported from the 7196 reanalysis; therefore, the RPD was calculated from those results. The RPD was not calculable in the initial analysis since the duplicate sample was nondetect. The detected result in the parent sample was less than 5 times the RL; therefore, no qualifications were applied to the soil samples in this SDG on the basis of FD results.

Percent Solids

The moisture content for samples 135-FF23A-12.0-12.5 (JC3801-9) and 135-FF24A-13.3-13.8 (JC3801-17) exceeded the acceptable limit of 50% and thus the sample results were qualified (J) as estimated on the basis of moisture content.

Refer to the nonconformance tables in Attachment B for a listing of qualified sample(s).

Sample Results

The concentrations of total chromium (reported in SDG JC3801A) were compared to the concentrations of hexavalent chromium for each associated sample to ensure that the chromium concentrations were greater than the hexavalent chromium concentrations. No qualifications were applied. Refer to the tables in Appendix B for a listing of this results comparison.

Reported results (flagged B by the laboratory) less than the RL, but greater than or equal to the method detection limit (MDL), are approximate values and have been qualified as estimated (J) on the basis of quantitation uncertainty.

Data Quality and Usability

The results for hexavalent chromium in all soil samples were rejected; however, the results may be usable for project objectives as discussed below. Rejected, qualified, and detected results are presented in Attachments A and B.

Based on the initial and reanalysis MS soluble and insoluble recoveries, the hexavalent chromium results in all the soil samples in this SDG were rejected. However, based on the reducing potential of the sample matrix shown by the Eh/pH phase diagram and the additional ancillary parameters, there is evidence to suggest that the matrix for this sample was reducing and not capable of supporting hexavalent chromium. Therefore, even though the sample results were rejected (RA) based on MS %Rs, these results may be usable for site decisions as estimated values. The highest detected hexavalent chromium result or the nondetect hexavalent chromium result with the lowest reporting limit (RL) between the initial analysis and reanalysis was reported for each sample.

The following additional issues were noted for this sample set:

- Sample results reported between the MDL and RL, and or qualified due to high percent moisture content are usable as estimated values with an unknown directional bias.

- Replicate Method 7199 injections for sample 135-FF23A-12.0-12.5 (JC3801-9) did not meet the 20% RPD limit (see table of 7199 Replicate RPDs in Attachment B).

ATTACHMENTS

Attachment A: Target Analyte Summary Hitlist(s)

Attachment B: Data Validation Report Form

Attachment A

Target Analyte Summary Hitlist(s)

Soil Target Analyte Summary Hit List (Hexavalent Chromium)

Site Name Narula Site 135 PDI Soil Sampling
Sampling Date September 14, 2015
Lab Name/ID Accutest, Dayton, NJ
SDG No JC3801 and JC3801R
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID 135-FB20150914

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-FF23A-1.0-1.5	JC3801-1	CHROMIUM (HEXAVALENT)	U	2.4	2.4	0.50	Reject	1
135-FF23A-12.0-12.5	JC3801-9	CHROMIUM (HEXAVALENT)	U	0.81B	0.81	1.1	Reject	1,2,3,4
135-FF23A-3.0-3.5	JC3801-2	CHROMIUM (HEXAVALENT)	U	0.76	0.76	0.54	Reject	1
135-FF23A-5.0-5.5	JC3801-3	CHROMIUM (HEXAVALENT)	U	0.32B	0.32	0.59	Reject	1,3
135-FF23A-5.0-5.5X	JC3801-4	CHROMIUM (HEXAVALENT)	U	U	U	0.60	Reject	1
135-FF24A-1.2-1.7	JC3801-14	CHROMIUM (HEXAVALENT)	U	2.3	2.3	0.46	Reject	1
135-FF24A-13.3-13.8	JC3801-17	CHROMIUM (HEXAVALENT)	U	U	U	0.84	Reject	1,2
135-FF24A-5.0-5.5	JC3801-11	CHROMIUM (HEXAVALENT)	U	U	U	0.51	Reject	1
135-FF24A-9.0-9.5	JC3801-13	CHROMIUM (HEXAVALENT)	U	0.84	0.84	0.48	Reject	1
135-FF23A-11.0-11.5	JC3801-7R	CHROMIUM (HEXAVALENT)	U	0.51	0.51	0.47	Reject	1
135-FF23A-11.5-12.0	JC3801-8R	CHROMIUM (HEXAVALENT)	U	0.37B	0.37	0.53	Reject	1,3
135-FF23A-7.0-7.5	JC3801-5R	CHROMIUM (HEXAVALENT)	U	3.0	3.0	0.50	Reject	1
135-FF23A-9.0-9.5	JC3801-6R	CHROMIUM (HEXAVALENT)	U	0.38B	0.38	0.48	Reject	1,3
135-FF24A-11.0-11.5	JC3801-16R	CHROMIUM (HEXAVALENT)	U	0.47	0.47	0.47	Reject	1
135-FF24A-12.8-13.3	JC3801-18R	CHROMIUM (HEXAVALENT)	U	0.57	0.57	0.48	Reject	1
135-FF24A-3.0-3.5	JC3801-15R	CHROMIUM (HEXAVALENT)	U	U	U	0.53	Reject	1
135-FF24A-7.0-7.5	JC3801-12R	CHROMIUM (HEXAVALENT)	U	0.55	0.55	0.46	Reject	1

Note: A “U” under Method Blank column indicates a nondetect result.
A “U” under the Laboratory Sample Result and Validation Sample Result columns indicates a nondetect result at the RL.

NJDEP Laboratory Footnote

1. The reported positive or nondetected result was rejected (RA) because both the soluble and insoluble the matrix spike recoveries were less than 50% in the initial and reanalysis.

2. The reported value was qualified (J/UJ) because the sample moisture content exceeded 50%.

3. The reported result was greater than the MDL but less than the RL and qualified (J) as estimated.

4. The reported result was qualified (J/UJ) since it did not meet the 7199 replicate injection RPD criteria.

Attachment B

Data Validation Report Form

Client Name: PPG Industries	Project Number: 60314351.GA.DE.PDI.P3
Site Location: Narula Site 135 PDI Soil Sampling, Jersey City, NJ	Project Manager: Scott Mikaelian
Laboratory: Accutest, Dayton, NJ	Type of Validation: Full
Laboratory Job No: JC3801 and JC3801R	Date Checked: 10/06/15
Validator: Sharon McKechnie	Peer: Mary Kozik

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X			
Field I.D. included?	X			
Laboratory I.D. included?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6C?	X			
Signed COCs included?	X			
Date of sample collection included?	X			
Date of sample digestion included?	X			
Holding time to digestion met criteria? (Soils -30 days from collection to digestion.)	X			
Date of analysis included?	X			
Holding time to analysis met criteria? (Soils -168 hours from digestion to analysis; Aqueous - 24 hours from collection to analysis.	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			

Definitions: MDL Method Detection Limit; %R Percent Recovery; RL Reporting Limit; RPD Relative Percent Difference; RSD Relative Standard Deviation: Corr Correlation Coefficient.

ITEM	YES	NO	N/A	COMMENTS
Initial calibration documentation included in lab package?	X			
1) Blank plus 4 standards (7196A) or blank plus 3 standards (7199)	X			
2) Correlation coefficient of =0.995 (7196A) or =0.999 (7199)	X			
3) Calibrate daily or each time instrument is set up.	X			
Calibration Check Standard (CCS) for 7196A and Quality Control Sample (QCS) for 7199 Included in Lab Package?	X			
1) %R criteria met? (90 - 110%)	X			
2) Correct frequency of one per every 10 samples	X			
3) CCS and QCS from independent source and at mid-level of calibration curve	X			
Calibration Blanks	X			
1) Analyzed prior to initial calibration standards and after each CCS/QCS?	X			
2) Absolute value should not exceed MDL.	X			
Method Blank, Field Blanks, and/or Equipment Blanks Included in Lab Package?	X			
1) Method blank analyzed with each preparation batch?	X			
2) Absolute value should not exceed MDL.	X			
Eh and pH Data	X			
1) Eh and pH data was included and plotted for all samples?	X			
Soluble Matrix Spike Data Included in Lab Package?	X			JC3801-9
1) Soluble Matrix %R criteria met? (75-125%R).		X		See nonconformance table
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?		X		JC3801-9 Initial and rerun spiked at 109 mg/kg and 104 mg/kg, respectively .The data was not affected.
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			

ITEM	YES	NO	N/A	COMMENTS
Insoluble Matrix Spike Data Included in Lab Package?	X			JC3801-9
1) Insoluble Matrix %R criteria met? (75-125%R).		X		See nonconformance table
2) Was the spike concentration around 400 to 800 mg/Kg?		X		JC3801-9 Initial and rerun spiked at 2180 mg/kg and 2330 mg/kg, respectively .The data was not affected.
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Post Digestion Spike	X			JC3801-9
1) Post Digestion Spike %R criteria met? (85-115%R).	X			See tables
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?	X			
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Sample Duplicate Data Included in Lab Package?	X			JC3801-9
1) RPD criteria met? (RPD $\leq$ 20%) if both results are ≥4x RL or absolute difference $\leq$ RL if either or both results are <4xRL	X			See tables
2) Was a sample duplicate analyzed at the frequency of 1 per batch or 20 samples?	X			
Was a Laboratory Control Sample (LCS) Included in Lab Package?	X			
1) %R criteria met? (80-120%R).	X			
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples?	X			
Were any Field Duplicate samples submitted with this SDG?	X			JC3801-3/ JC3801-4
11) Were Field duplicate RPD criteria met? (RPD$\leq$50% for both sample results >5xRL or absolute difference $\leq$ RL if either or both results are <5xRL.	X			See table
Were all sample quantitation and reporting requirements met?	X			

ITEM	YES	NO	N/A	COMMENTS
1) Were all solid samples reported with percent solids > 50%?		X		See nonconformance table
2) Were any samples analyzed or reported with dilutions?		X		
Miscellaneous Items	X			
1) For soils by 7196A, was the pH within a range of 7.0-8.0?	X			
2) For soils by 7199, was the pH within a range of 9.0-9.5?	X			
3) For aqueous by 7196A, was the pH with a range of 1.5-2.5?	X			
4) For soils (3060A), was the digestion temperature 90-95C for at least 60 minutes?	X			
5) For 7199, was each sample injected twice and was the RPD ≤20?		X		See nonconformance table

Matrix Spikes

Sample ID	Lab ID	Analyte	Matrix Spike	% Recovery	Lower Limit	Upper Limit
135-FF23A-12.0-12.5	JC3801-9	CHROMIUM (HEXAVALENT)	Soluble	0.5	75	125
135-FF23A-12.0-12.5	JC3801-9	CHROMIUM (HEXAVALENT)	Insoluble	1.0	75	125
135-FF23A-12.0-12.5	JC3801-9R	CHROMIUM (HEXAVALENT)	Soluble	2.1	75	125
135-FF23A-12.0-12.5	JC3801-9R	CHROMIUM (HEXAVALENT)	Insoluble	1.1	75	125

Post Digestion Spikes

Sample ID	Lab ID	Compound	Analysis Batch	% Recovery	pH Adjusted % Recovery	Lower Limit	Upper Limit
135-FF23A-12.0-12.5	JC3801-9	CHROMIUM (HEXAVALENT)	Initial	32	63	85	115
135-FF23A-12.0-12.5	JC3801-9R	CHROMIUM (HEXAVALENT)	Reanalysis	100	NA	85	115

Laboratory Duplicate

Sample ID	Lab ID	Analyte	Sample Result (mg/kg)	Duplicate Result (mg/kg)	QL (mg/kg)	RPD (%)	Action
135-FF23A-12.0-12.5	JC3801-9	CHROMIUM (HEXAVALENT)	0.81	ND	1.1	NC	See Memo

NC – Not calculable ND – Not detected

Hexavalent Chromium Field Duplicate

Sample ID	Duplicate ID	Sample Result (mg/kg)	QL (mg/kg)	Duplicate Result (mg/kg)	QL (mg/kg)	RPD (%)	Action
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	0.32 B	0.59	ND	0.60	NC	See Memo

NC – Not calculable ND – Not detected

7199 Replicate RPDs

Sample ID	Rep 1 (ppm)	Rep 2 (ppm)	RPD%	RPD Criteria ≤20
JC3801-1	0.00743	0.00689	7.5%	OK
JC3801-2	0.00000	0.00015	NC	Not calculable, See Memo
JC3801-3	0.00000	0.00000	0.0%	OK
JC3801-4	0.00000	0.00042	NC	Not calculable, See Memo
JC3801-5	0.05831	0.05814	0.3%	OK
JC3801-6	0.00748	0.00478	44.0%	OK
JC3801-7	0.01106	0.01007	9.4%	OK
JC3801-8	0.00786	0.00743	5.6%	OK
JC3801-9	0.00126	0.00215	52.2%	>20%, Estimate (J/UJ)
JC3801-11	0.00000	0.00000	0.0%	OK
JC3801-12	0.01185	0.01091	8.3%	OK
JC3801-13	0.00609	0.00666	8.9%	OK
JC3801-14	0.03769	0.03785	0.4%	OK
JC3801-15	0.00000	0.00000	0.0%	OK
JC3801-16	0.00900	0.00847	6.1%	OK
JC3801-17	0.00331	0.00305	8.2%	OK
JC3801-18	0.01121	0.01131	0.9%	OK

Percent Solids

Sample ID	Percent Solids (%)	Status
135-FF23A-1.0-1.5	79.9	ok @50%
135-FF23A-11.0-11.5	82.9	ok @50%
135-FF23A-11.5-12.0	77.4	ok @50%
135-FF23A-12.0-12.5	37.5	<50%, Estimate (J/UJ)
135-FF23A-3.0-3.5	73.6	ok @50%
135-FF23A-5.0-5.5	67.9	ok @50%
135-FF23A-5.0-5.5X	66.6	ok @50%
135-FF23A-7.0-7.5	80.6	ok @50%

Sample ID	Percent Solids (%)	Status
135-FF23A-9.0-9.5	83.6	ok @50%
135-FF24A-1.2-1.7	86.1	ok @50%
135-FF24A-11.0-11.5	85	ok @50%
135-FF24A-12.8-13.3	81.9	ok @50%
135-FF24A-13.3-13.8	47.6	<50%, Estimate (J/UJ)
135-FF24A-3.0-3.5	74.7	ok @50%
135-FF24A-5.0-5.5	78.9	ok @50%
135-FF24A-7.0-7.5	84.7	ok @50%
135-FF24A-9.0-9.5	83	ok @50%

Chromium vs. Hexavalent Chromium

Field Sample ID	Lab Sample ID	Chromium (mg/kg)	Hexavalent Chromium (mg/kg)
135-FF23A-1.0-1.5	JC3801-1	28.2	2.4
135-FF23A-3.0-3.5	JC3801-2	24.5	0.76
135-FF23A-5.0-5.5	JC3801-3	24.1	0.32
135-FF23A-5.0-5.5X	JC3801-4	17.9	ND
135-FF23A-7.0-7.5	JC3801-5	20.2	3.0
135-FF23A-9.0-9.5	JC3801-6	18.4	0.38
135-FF23A-11.0-11.5	JC3801-7	14.2	0.51
135-FF23A-11.5-12.0	JC3801-8	14.6	0.37
135-FF23A-12.0-12.5	JC3801-9	23.8	0.81
135-FB201509014 (Equipment Blank)	JC3801-10	ND	ND

SDG#: JC3801/ Method 7196	x - concentration	y - response
Batch: GN32790		
Cr+6 ICAL 09/20/15	0	0
Soil	0.01	0.01
(p. 75 of data pkg)	0.05	0.045
	0.1	0.090
	0.3	0.275
	0.5	0.450
	0.8	0.714
	1	0.889

				(p. 75 of data pkg)
AECOM Calculated Offset	0.0028	OK, rounding	Reported Offset	0.0021
AECOM Slope	0.8890	OK, rounding	Reported Slope	0.8897
AECOM Calculated r	0.99996	OK	Reported r	0.99996

LCS calculation	**GP92147-B1**	**P. 55,75**		
Background Absorbance	0			
Total absorbance	0.848			
Total absorbance - background	0.848			
Instrument Concentration	0.951			
Sample weight (mg/kg)	0.0025			
Final Volume (L)	0.1			
Dilution Factor	1			
AECOM Calculated LCS Result (mg/Kg)	38	OK	Reported Result (mg/Kg)	38

%R = Found/True*100	**GP92147-B1**	**P. 55,75**		
True Value (mg/kg)	40			
AECOM Calculated %R	95	OK	Reported %R	95

MS calculation	**GP92147-S2**	**P. 57,75**	**JC3801-9**	
Background reading	0.036			
Total absorbance	0.221			
Total absorbance - background	0.185			
Instrument Concentration	0.2050			
Sample weight (mg/kg)	0.00252			
Final Volume (L)	0.1			
Percent solids	0.375			
Dilution Factor	1			
AECOM Calculated MS Result (mg/Kg)	21.7	OK, rounding	Reported Result (mg/Kg)	21.8

%R = Found/True*100	**GP92147-S2**	**P. 57,75**	**JC3801-9**	
True Value (mg/kg)	2180			
Native concentration (mg/Kg)	0.81			
AECOM%R	1.0	OK	Reported %R	1.0

Percent Solids	**JC3801-17**	**P. 59**	**135-FF23A-11.0-11.5**	
Empty dish weight=	22.33			
Wet weight=	29.12			
Dry weight=	27.96			
AECOM %solids =	82.9	OK	reported %solids=	82.9

Reporting Limit	**JC3801-1**	**P.11,79**	**135-FF23A-1.0-1.5**	
Low Standard	0.01			
Initial weight (mg/kg)	0.00250			
Final volume (L)	0.1			
Percent solids	0.799			
Dilution Factor	1			
Reporting Limit	0.50	OK	Reported RL (mg/Kg)=	0.50

Sample Calculations	**JC3801-1**	**P.11,79**	**135-FF23A-1.0-1.5**	
Background reading	0.08			
Total absorbance	0.123			
Total absorbance - background	0.043			
Instrument Response	0.045			
Sample weight (mg/kg)	0.00242			
Final Volume (L)	0.1			
Percent solids	0.799			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	2.3	OK, rounding	Reported Result (mg/Kg)	2.4

SDG: JC3801R/ Method 7199 **Batch GN33077** Cr+6 ICAL 09/24/15 Soil (p. 126-132 of data package)	x - concentration	y - response (area) mAU*min	
	0.00	0.0077	STDA
	0.005	0.049	STDB
	0.05	0.399	STDC
	0.1	0.798	STDD
	0.5	3.877	STDE

				(p. 126-132 of data package)
AECOM Calculated Offset	0.0134	OK	Reported Offset	0.0134
AECOM Slope	7.7317	OK	Reported Slope	7.7317
AECOM Calculated r	1.0000	OK	Reported r	1.0000

LCS calculation	**GP92276-B1**	**P. 54,147**		
Highest replicate response (AREA, mAU*min)	1.797			
Instrument Concentration (ug/L)	0.231			
Sample weight	0.0025			
Percent solids	1			
Dilution Factor	4			
AECOM Calculated LCS Result (mg/Kg)	37	OK	Reported Result (mg/Kg)	37

%R = Found/True*100	**GP92276-B1**	**P. 54,147**		
True Value (mg/kg)	40			
AECOM Calculated %R	92.3	OK, rounding	Reported %R	92.5

MS calculation	**GP92276-S1**	**P. 56,152**	**JC3801-9R**	
Highest replicate response (mAU*min)	0.05700			
Instrument Concentration (ug/L)	0.0056			
Sample weight	0.00256			
Percent solids	0.375			
Dilution Factor	4			
AECOM Calculated MS Result (mg/Kg)	2.3	OK, rounding	Reported Result (mg/Kg)	2.2

%R = Found/True*100	**GP92276-S1**	**P. 56,152**	**JC3801-9R**	
True Value (mg/kg)	104			
Native concentration (mg/Kg)	0			
%R	2.3	OK, rounding	Reported %R	2.1

Percent Solids	**JC3801-9R**	**P. 67**	**135-FF23A-12.0-12.5**	
Empty dish weight=	19.72			
Wet weight=	27.62			
Dry weight=	22.68			
AECOM %solids =	37.5	OK	reported %solids=	37.5

Reporting limit	**JC3801-5R**	**P. 14, 180**	**135-FF23A-7.0-7.5**	
Low Standard	0.01			
Initial weight (g)	0.00248			
Final volume (L)	0.1			
Percent solids	0.806			
Dilution Factor	1			
Reporting Limit	0.50	OK	Reported RL (mg/Kg)=	0.50

Sample Calculations	**JC3801-5R**	**P. 14,180**	**135-FF23A-7.0-7.5**	
Background reading from highest response	0			
Instrument Response highest response	0.46400			
Total response for replicate 1	0.464			
Instrument Response (mg/L)	0.058			
Sample weight (mg)	0.00248			
Final Volume (L)	0.1			
Percent solids	0.806			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	3		Reported Result (mg/Kg)	3

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Data Validation Report

Project:	Narula/Smith Site 135 PDI Soil Sampling
Laboratory:	Accutest, Dayton, NJ
Laboratory Job No.:	JC3801A
Analysis/Method:	Volatile Organic Compounds (VOCs) by GCMS/SW846-8260 Semivolatile Organic Compounds (SVOCs) by GCMS/SW846-8270 TAL Metals SW846 3050B/6010C/7470/7471
Validation Level:	Limited
Site Location/Address:	Narula Site 135 PDI Sampling /Jersey City, NJ
AECOM Project No:	60314351.GA.DE.PDI.P3
Prepared by: Charlene Livingston Flint /AECOM	Completed on: 10/07/2015
Reviewed by: Mary Kozik /AECOM	File Name: JC3801A_2015-10-07_DVReport-F

Introduction

The data were reviewed in accordance with the FSP-QAPP and the following NJDEP and / or Region 2 guidance documents and validation Standard Operating Procedure(s) (SOP):

- NJDEP Office of Data Quality SOP 5.A.16, Rev 1 (May 2002), Quality Assurance Data Validation of Analytical Deliverables for Inorganics (based on USEPA SW-846 Methods);
- Validating Volatile Organic Compounds By Gas Chromatography/Mass Spectrometry SW-846 Method 8260B, SOP HW-24, Revision 2;
- Validating Semivolatile Organic Compounds By Gas Chromatography/Mass Spectrometry SW-846 Method 8270, SOP HW-22, Revision 4;

The results of quality control data analyzed with site samples were used to assess the overall reliability of the data. The following qualifiers were used to identify data quality issues:

U: Indicates the analyte was not detected in the sample above the sample reporting limit.

J: Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

UJ: Indicates the analyte was not detected above the reporting limit and the reporting limit was approximate.

UB: The analyte concentration is less than or equal to three (3) times the concentration in the associated method/prep blank. The presence of the analyte in the sample is negated (UB) due to laboratory contamination.

JB: The analyte concentration is greater than three (3) times, but less than or equal to ten (10) times the concentration in the associated method/prep blank. The presence of that analyte in the sample is considered "real". The concentration is quantitatively qualified (JB) due to method blank contamination.

R: The sample result was rejected due to serious deficiencies; the presence or absence of the analyte could not be confirmed.

RA: The sample result was rejected due to NJ specific data validation QC requirements; however, the result is usable for project objectives. Refer to the Data Quality and Usability section in this data validation report for further discussion.

Sample Information

The samples listed below were collected by AECOM on September 14, 2015, as part of the Narula/Smith Site 135 PDI Soil Sampling at the Jersey City, New Jersey site. Only the sample(s) and parameter(s) listed below were validated.

Field ID	Laboratory ID	Matrix	Fraction
135-FB201509014 (Equipment Blank)	JC3801-10A	Aqueous	Mercury, Metals, SVOCs and VOCs
135-FF23A-1.0-1.5	JC3801-1A	Soil	Mercury, Metals, SVOCs and VOCs
135-FF23A-11.0-11.5	JC3801-7A	Soil	Mercury, Metals, SVOCs and VOCs
135-FF23A-11.5-12.0	JC3801-8A	Soil	Mercury, Metals, SVOCs and VOCs
135-FF23A-12.0-12.5	JC3801-9A	Soil	Mercury, Metals, SVOCs and VOCs
135-FF23A-3.0-3.5	JC3801-2A	Soil	Mercury, Metals, SVOCs and VOCs
135-FF23A-5.0-5.5	JC3801-3A	Soil	Mercury, Metals, SVOCs and VOCs
135-FF23A-5.0-5.5X (Field Duplicate of135-FF23A-5.0-5.5)	JC3801-4A	Soil	Mercury, Metals, SVOCs and VOCs
135-FF23A-7.0-7.5	JC3801-5A	Soil	Mercury, Metals, SVOCs and VOCs
135-FF23A-9.0-9.5	JC3801-6A	Soil	Mercury, Metals, SVOCs and VOCs

The samples were collected following the procedures detailed in the Remedial Investigation Work Plan - Soil for Non-Residential Chromate Chemical Production Waste Sites 114, 132, 133, 135, 137, 143, and 186, Jersey City, New Jersey, or applicable proposal or work plan, and the Field Sampling Plan/Quality Assurance Project Plan for Non-Residential and Residential Chromium Sites Hudson County, New Jersey (December 2011).

General Comments

The data package was complete. Quality control (QC) issues identified during validation are discussed below. Refer to the Soil Target Analyte Summary Hit(s) in Attachment A for a listing of all detected results, qualified results, and associated qualifications, where applicable. The nonconformances for each section discussed below are presented in Attachment B.

TAL Metals

Method Blank

The aqueous method blank (MB), from batch MP89016, reported calcium, copper, sodium, and zinc. Calcium was detected in the associated equipment blank, 135-FB201509014, at a concentration less than three times the amount in the method blank; therefore the result for calcium in the equipment blank was negated at the RL. All other analytes detected in the MB were not detected in the equipment blank; therefore, no additional qualifications were necessary.

The soil MB, from batch MP89024, reported barium, calcium, chromium, lead, manganese, and sodium at concentrations greater than the method detection limit (MDL) but less than the reporting limit (RL). These analytes were detected in the associated soil samples at a concentration greater than ten times the amount in the MB; therefore, no qualifications were necessary.

The MB from batch MP89039, reported mercury at a concentration greater than the MDL but less than the RL. Mercury was detected in the associated soil samples at concentrations greater than ten times the amount in the MB with the exceptions of samples 135-FF23A-9.0-9.5 (JC3801-6A), 135-FF23A-11.0-11.5 (JC3801-7A) and 135-FF23A-12.0-12.5 (JC3801-9A). These three samples reported concentrations of mercury less than three times the amount in the method blank; therefore, mercury was negated at the reported concentration for sample 135-FF23A-12.0-12.5 or at the RL for samples 135-FF23A-9.0-9.5 and 135-FF23A-11.0-11.5.

Equipment Blank

Equipment blank 135-FB201509014 was associated with the soil samples in this SDG. Manganese was detected in the equipment blank at a concentration greater than the MDL but less than the RL. This analyte was detected in all of the soil samples at a concentration greater than ten times the amount in the equipment blank; therefore, no qualifications were taken.

MS Results

The laboratory selected 135-FF23A-12.0-12.5 (JC3801-9A) as the source for the MS analysis.

The MS percent recoveries for aluminum and potassium exceeded the QC %R limits; therefore, the analytes were estimated (J) in the associated soil samples with a possible high bias.

The MS %R for antimony was below the QC %R limits; therefore, the antimony results were qualified as estimated (UJ) in the associated soil samples with a possible low bias.

The MS %R for iron was low but no qualifications were taken as the native amount in the sample was greater than four times the amount spiked.

Field Duplicate Results

Samples 135-FF23A-5.0-5.5 (JC3801-3A) and 135-FF23A-5.0-5.5X (JC3801-4A) were collected as the field duplicate pair in this SDG.

The relative percent difference (RPD) between the parent sample result and the laboratory duplicate result for antimony, arsenic, cadmium, calcium, copper, lead, mercury, selenium, sodium and zinc did not meet QC criteria of <50% RPD; therefore, these analyte results for samples 135-FF23A-5.0-5.5 and 135-FF23A-5.0-5.5X were estimated (J) with the potential for bias in an unknown direction due to poor field duplicate precision.

Percent Solids

The moisture content for soil sample 135-FF23A-12.0-12.5 exceeded the acceptable limit of 50%, thus metal data for this soil sample was qualified (J) as estimated.

Serial Dilution

A serial dilution was performed on sample 137-R29A-PB-21.5-22.0. Arsenic, cadmium, lead, silver and thallium all had a percent difference (%D) greater than 10% but were less than 10x the IDL. No action was necessary.

Sample Results

Reported results (flagged B by the laboratory) that were less than the RL, but greater than or equal to the MDL, are approximate values and have been qualified as estimated (J).

VOCs

MS/MSD Results

The laboratory selected sample 135-FF23A-12.0-12.5 (JC3801-9) as the source for the MS analysis.

The MS recovery for carbon disulfide was below the laboratory specific QC requirements. Thus, the result for carbon disulfide was qualified as estimated (J) with the potential for low bias in sample 135-FF23A-12.0-12.5.

The compounds, cis- 1,3-dichloropropene and styrene, had relative percent differences (RPDs) that exceeded the QC requirements and thus the results for these compounds in sample 135-FF23A-12.0-12.5 was qualified as estimated (J/UJ) with the potential for bias in an unknown direction.

Field Duplicate Results

Samples 135-FF23A-5.0-5.5 (JC3801-3A) and 135-FF23A-5.0-5.5X (JC3801-4A) were collected as the field duplicate pair in this SDG.

The difference between the parent sample result and the field duplicate result for several compounds in the initial analysis did not meet criteria of ≤50% RPD; therefore, the results for these compounds for samples 135-FF23A-5.0-5.5 and 135-FF23A-5.0-5.5X were qualified as estimated (J/UJ) with the potential for bias in an unknown direction due to poor field duplicate precision. See the Soil Target Summary Hitlist in Attachment A.

Percent Solids

The moisture content for 135-FF23A-12.0-12.5 exceeded the acceptable limit of 50%, thus the VOC data for the affected samples were qualified (J) as estimated.

Sample Results

Reported results (flagged B by the laboratory) that were less than the RL, but greater than or equal to the MDL, are approximate values and have been qualified as estimated (J).

SVOCs

Equipment Blank

Equipment blank 135-FB201509014 was associated with the soil samples in this SDG. Bis(2-ethyl hexyl) phthalate was detected in the equipment blank at a concentration greater than the MDL but less than the MDL. The associated soil samples were nondetect for this compound; therefore, no qualifications were taken.

MS/MSD Results

The laboratory selected sample 135-FF23A-12.0-12.5 (JC3801-9) as the source for the MS analysis.

The MS recoveries for 2,4 dinitrophenol, hexachlorocyclopentadiene and hexachloroethane were below the laboratory specific QC requirements. Thus, the result for these compounds were qualified as estimated (UJ) with the potential for low bias in sample 135-FF23A-12.0-12.5.

Field Duplicate Results

Samples 135-FF23A-5.0-5.5 (JC3801-3A) and 135-FF23A-5.0-5.5X (JC3801-4A) were collected as the field duplicate pair in this SDG.

The difference between the parent sample result and the field duplicate result for several compounds in the initial analysis did not meet criteria of ≤50% RPD; therefore, the results for these compounds for samples 135-FF23A-5.0-5.5 and 135-FF23A-5.0-5.5X were qualified as estimated (J) with the potential for bias in an unknown direction due to poor field duplicate precision. See the Soil Target Summary Hitlist in Attachment A.

Percent Solids

The moisture content for 135-FF23A-12.0-12.5 exceeded the acceptable limit of 50%, thus the SVOC data for the affected samples were qualified (J) as estimated.

Sample Results

Reported results (flagged B by the laboratory) that were less than the RL, but greater than or equal to the MDL, are approximate values and have been qualified as estimated (J).

Data Quality and Usability

In general, these data appear to be valid and may be used for decision-making purposes. No data were rejected. Qualified results, if applicable, are discussed in attachments A and B below.

The MS percent recoveries for aluminum and potassium qualified due to high MS recoveries are useable as estimated values with the potential for high bias.

The antimony soil sample results qualified due to low MS recoveries are usable as estimated values with the potential for low bias.

The result for calcium in the equipment blank was negated at the RL and is useable as nondetected results.

Mercury results were negated at the reported concentration for sample 135-FF23A-12.0-12.5 or at the RL for samples 135-FF23A-9.0-9.5 and 135-FF23A-11.0-11.5 and are useable as nondetected results.

The result for carbon disulfide was qualified as estimated (J) with the potential for low bias in sample 135-FF23A-12.0-12.5 based on the MS recovery.

The results for cis- 1,3-dichloropropene and styrene in sample 135-FF23A-12.0-12.5 were qualified as estimated (J/UJ) with the potential for bias in an unknown direction due to RPD values that exceeded the control limits.

The results for 2,4 dinitrophenol, hexachlorocyclopentadiene and hexachloroethane were qualified as estimated (UJ) with the potential for low bias in sample 135-FF23A-12.0-12.5 based on MS recoveries.

The results for several VOC and SVOC compounds in samples 135-FF23A-5.0-5.5 and 135-FF23A-5.0-5.5X were qualified as estimated (J) with the potential for bias in an unknown direction due to poor field duplicate precision.

Sample results reported between the MDL and RL, qualified due to poor field duplicate precision, qualified due to low MS recoveries, and or qualified due to high percent moisture are usable as estimated values.

ATTACHMENTS

Attachment A: Target Analyte Summary Hitlist(s)

Attachment B: Data Validation Report Form

Attachment A

Target Analyte Summary Hitlist(s)

Soil Target Analyte Summary Hit List (TAL Metals)

Site Name Narula/Smith Site 135 PDI Soil Sampling
Sampling Date September 14, 2015
Lab Name/ID Accutest, Dayton, NJ
SDG No JC3801A
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID 135-FB201509014

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-FF23A-1.0-1.5	JC3801-1A	ALUMINUM	U	5010	5010	64	Qualify	2
135-FF23A-3.0-3.5	JC3801-2A	ALUMINUM	U	6020	6020	70	Qualify	2
135-FF23A-5.0-5.5	JC3801-3A	ALUMINUM	U	5050	5050	77	Qualify	2
135-FF23A-5.0-5.5X	JC3801-4A	ALUMINUM	U	4640	4640	72	Qualify	2
135-FF23A-7.0-7.5	JC3801-5A	ALUMINUM	U	14100	14100	60	Qualify	2
135-FF23A-9.0-9.5	JC3801-6A	ALUMINUM	U	13000	13000	62	Qualify	2
135-FF23A-11.0-11.5	JC3801-7A	ALUMINUM	U	11400	11400	63	Qualify	2
135-FF23A-11.5-12.0	JC3801-8A	ALUMINUM	U	12900	12900	67	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	ALUMINUM	U	17700	17700	130	Qualify	2,5
135-FF23A-1.0-1.5	JC3801-1A	ANTIMONY	U	20.4	20.4	2.6	Qualify	3
135-FF23A-3.0-3.5	JC3801-2A	ANTIMONY	U	2.9	2.9	2.8	Qualify	3
135-FF23A-5.0-5.5	JC3801-3A	ANTIMONY	U	2.0B	2.0	3.1	Qualify	3,4,6
135-FF23A-5.0-5.5X	JC3801-4A	ANTIMONY	U	0.72B	0.72	2.9	Qualify	3,4,6
135-FF23A-7.0-7.5	JC3801-5A	ANTIMONY	U	U	U	2.4	Qualify	3
135-FF23A-9.0-9.5	JC3801-6A	ANTIMONY	U	U	U	2.5	Qualify	3
135-FF23A-11.0-11.5	JC3801-7A	ANTIMONY	U	U	U	2.5	Qualify	3
135-FF23A-11.5-12.0	JC3801-8A	ANTIMONY	U	U	U	2.7	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	ANTIMONY	U	U	U	5.1	Qualify	3,5

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-FF23A-1.0-1.5	JC3801-1A	ARSENIC	U	22.9	22.9	2.6		
135-FF23A-3.0-3.5	JC3801-2A	ARSENIC	U	10.1	10.1	2.8		
135-FF23A-5.0-5.5	JC3801-3A	ARSENIC	U	12.6	12.6	3.1	Qualify	4
135-FF23A-5.0-5.5X	JC3801-4A	ARSENIC	U	5.7	5.7	2.9	Qualify	4
135-FF23A-7.0-7.5	JC3801-5A	ARSENIC	U	5.4	5.4	2.4		
135-FF23A-9.0-9.5	JC3801-6A	ARSENIC	U	4.7	4.7	2.5		
135-FF23A-11.0-11.5	JC3801-7A	ARSENIC	U	4.7	4.7	2.5		
135-FF23A-11.5-12.0	JC3801-8A	ARSENIC	U	5.9	5.9	2.7		
135-FF23A-12.0-12.5	JC3801-9A	ARSENIC	U	11.2	11.2	5.1	Qualify	5
135-FF23A-1.0-1.5	JC3801-1A	BARIUM	U	598	598	26		
135-FF23A-3.0-3.5	JC3801-2A	BARIUM	U	344	344	28		
135-FF23A-5.0-5.5	JC3801-3A	BARIUM	U	162	162	31		
135-FF23A-5.0-5.5X	JC3801-4A	BARIUM	U	106	106	29		
135-FF23A-7.0-7.5	JC3801-5A	BARIUM	U	60.0	60.0	24		
135-FF23A-9.0-9.5	JC3801-6A	BARIUM	U	39.6	39.6	25		
135-FF23A-11.0-11.5	JC3801-7A	BARIUM	U	65.8	65.8	25		
135-FF23A-11.5-12.0	JC3801-8A	BARIUM	U	80.1	80.1	27		
135-FF23A-12.0-12.5	JC3801-9A	BARIUM	U	33.3B	33.3	51	Qualify	5,6
135-FF23A-1.0-1.5	JC3801-1A	BERYLLIUM	U	0.34	0.34	0.26		
135-FF23A-3.0-3.5	JC3801-2A	BERYLLIUM	U	0.49	0.49	0.28		
135-FF23A-5.0-5.5	JC3801-3A	BERYLLIUM	U	0.32	0.32	0.31		
135-FF23A-5.0-5.5X	JC3801-4A	BERYLLIUM	U	0.32	0.32	0.29		
135-FF23A-7.0-7.5	JC3801-5A	BERYLLIUM	U	0.61	0.61	0.24		
135-FF23A-9.0-9.5	JC3801-6A	BERYLLIUM	U	0.51	0.51	0.25		
135-FF23A-11.0-11.5	JC3801-7A	BERYLLIUM	U	0.55	0.55	0.25		
135-FF23A-11.5-12.0	JC3801-8A	BERYLLIUM	U	0.57	0.57	0.27		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-FF23A-12.0-12.5	JC3801-9A	BERYLLIUM	U	0.63	0.63	0.51	Qualify	5
135-FF23A-1.0-1.5	JC3801-1A	CADMIUM	U	3.6	3.6	0.64		
135-FF23A-3.0-3.5	JC3801-2A	CADMIUM	U	0.62B	0.62	0.70	Qualify	6
135-FF23A-5.0-5.5	JC3801-3A	CADMIUM	U	4.0	4.0	0.77	Qualify	4
135-FF23A-5.0-5.5X	JC3801-4A	CADMIUM	U	0.48B	0.48	0.72	Qualify	4,6
135-FF23A-7.0-7.5	JC3801-5A	CADMIUM	U	0.13B	0.13	0.60	Qualify	6
135-FF23A-9.0-9.5	JC3801-6A	CADMIUM	U	0.11B	0.11	0.62	Qualify	6
135-FF23A-11.0-11.5	JC3801-7A	CADMIUM	U	0.11B	0.11	0.63	Qualify	6
135-FF23A-11.5-12.0	JC3801-8A	CADMIUM	U	0.080B	0.080	0.67	Qualify	6
135-FF23A-12.0-12.5	JC3801-9A	CADMIUM	U	0.36B	0.36	1.3	Qualify	5,6
135-FF23A-1.0-1.5	JC3801-1A	CALCIUM METAL	U	7360	7360	640		
135-FF23A-3.0-3.5	JC3801-2A	CALCIUM METAL	U	3320	3320	700		
135-FF23A-5.0-5.5	JC3801-3A	CALCIUM METAL	U	6990	6990	770	Qualify	4
135-FF23A-5.0-5.5X	JC3801-4A	CALCIUM METAL	U	13600	13600	720	Qualify	4
135-FF23A-7.0-7.5	JC3801-5A	CALCIUM METAL	U	1250	1250	600		
135-FF23A-9.0-9.5	JC3801-6A	CALCIUM METAL	U	1100	1100	620		
135-FF23A-11.0-11.5	JC3801-7A	CALCIUM METAL	U	1930	1930	630		
135-FF23A-11.5-12.0	JC3801-8A	CALCIUM METAL	U	1300	1300	670		
135-FF23A-12.0-12.5	JC3801-9A	CALCIUM METAL	U	2570	2570	1300	Qualify	5
135-FF23A-1.0-1.5	JC3801-1A	CHROMIUM	U	28.2	28.2	1.3		
135-FF23A-3.0-3.5	JC3801-2A	CHROMIUM	U	24.5	24.5	1.4		
135-FF23A-5.0-5.5	JC3801-3A	CHROMIUM	U	24.1	24.1	1.5		
135-FF23A-5.0-5.5X	JC3801-4A	CHROMIUM	U	17.9	17.9	1.4		
135-FF23A-7.0-7.5	JC3801-5A	CHROMIUM	U	20.2	20.2	1.2		
135-FF23A-9.0-9.5	JC3801-6A	CHROMIUM	U	18.4	18.4	1.2		
135-FF23A-11.0-11.5	JC3801-7A	CHROMIUM	U	14.2	14.2	1.3		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-FF23A-11.5-12.0	JC3801-8A	CHROMIUM	U	14.6	14.6	1.3		
135-FF23A-12.0-12.5	JC3801-9A	CHROMIUM	U	23.8	23.8	2.5	Qualify	5
135-FF23A-1.0-1.5	JC3801-1A	COBALT	U	5.3B	5.3	6.4	Qualify	6
135-FF23A-3.0-3.5	JC3801-2A	COBALT	U	6.7B	6.7	7.0	Qualify	6
135-FF23A-5.0-5.5	JC3801-3A	COBALT	U	4.8B	4.8	7.7	Qualify	6
135-FF23A-5.0-5.5X	JC3801-4A	COBALT	U	4.9B	4.9	7.2	Qualify	6
135-FF23A-7.0-7.5	JC3801-5A	COBALT	U	7.9	7.9	6.0		
135-FF23A-9.0-9.5	JC3801-6A	COBALT	U	6.8	6.8	6.2		
135-FF23A-11.0-11.5	JC3801-7A	COBALT	U	5.8B	5.8	6.3	Qualify	6
135-FF23A-11.5-12.0	JC3801-8A	COBALT	U	6.4B	6.4	6.7	Qualify	6
135-FF23A-12.0-12.5	JC3801-9A	COBALT	U	17.1	17.1	13	Qualify	5
135-FF23A-1.0-1.5	JC3801-1A	COPPER	U	503	503	3.2		
135-FF23A-3.0-3.5	JC3801-2A	COPPER	U	208	208	3.5		
135-FF23A-5.0-5.5	JC3801-3A	COPPER	U	225	225	3.8	Qualify	4
135-FF23A-5.0-5.5X	JC3801-4A	COPPER	U	62.8	62.8	3.6	Qualify	4
135-FF23A-7.0-7.5	JC3801-5A	COPPER	U	19.0	19.0	3.0		
135-FF23A-9.0-9.5	JC3801-6A	COPPER	U	13.7	13.7	3.1		
135-FF23A-11.0-11.5	JC3801-7A	COPPER	U	22.3	22.3	3.2		
135-FF23A-11.5-12.0	JC3801-8A	COPPER	U	17.0	17.0	3.3		
135-FF23A-12.0-12.5	JC3801-9A	COPPER	U	12.6	12.6	6.3	Qualify	5
135-FF23A-1.0-1.5	JC3801-1A	IRON	U	23800	23800	64		
135-FF23A-3.0-3.5	JC3801-2A	IRON	U	12100	12100	70		
135-FF23A-5.0-5.5	JC3801-3A	IRON	U	18000	18000	77		
135-FF23A-5.0-5.5X	JC3801-4A	IRON	U	15200	15200	72		
135-FF23A-7.0-7.5	JC3801-5A	IRON	U	16300	16300	60		
135-FF23A-9.0-9.5	JC3801-6A	IRON	U	15800	15800	62		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-FF23A-11.0-11.5	JC3801-7A	IRON	U	14300	14300	63		
135-FF23A-11.5-12.0	JC3801-8A	IRON	U	13300	13300	67		
135-FF23A-12.0-12.5	JC3801-9A	IRON	U	31600	31600	130	Qualify	5
135-FF23A-1.0-1.5	JC3801-1A	LEAD	U	4160	4160	12		
135-FF23A-3.0-3.5	JC3801-2A	LEAD	U	547	547	2.8		
135-FF23A-5.0-5.5	JC3801-3A	LEAD	U	396	396	3.1	Qualify	4
135-FF23A-5.0-5.5X	JC3801-4A	LEAD	U	202	202	2.9	Qualify	4
135-FF23A-7.0-7.5	JC3801-5A	LEAD	U	51.9	51.9	2.4		
135-FF23A-9.0-9.5	JC3801-6A	LEAD	U	20.2	20.2	2.5		
135-FF23A-11.0-11.5	JC3801-7A	LEAD	U	56.1	56.1	2.5		
135-FF23A-11.5-12.0	JC3801-8A	LEAD	U	50.7	50.7	2.7		
135-FF23A-12.0-12.5	JC3801-9A	LEAD	U	20.3	20.3	5.1	Qualify	5
135-FF23A-1.0-1.5	JC3801-1A	MAGNESIUM	U	1560	1560	640		
135-FF23A-3.0-3.5	JC3801-2A	MAGNESIUM	U	603B	603	700	Qualify	6
135-FF23A-5.0-5.5	JC3801-3A	MAGNESIUM	U	1500	1500	770		
135-FF23A-5.0-5.5X	JC3801-4A	MAGNESIUM	U	1330	1330	720		
135-FF23A-7.0-7.5	JC3801-5A	MAGNESIUM	U	3210	3210	600		
135-FF23A-9.0-9.5	JC3801-6A	MAGNESIUM	U	3140	3140	620		
135-FF23A-11.0-11.5	JC3801-7A	MAGNESIUM	U	3030	3030	630		
135-FF23A-11.5-12.0	JC3801-8A	MAGNESIUM	U	2850	2850	670		
135-FF23A-12.0-12.5	JC3801-9A	MAGNESIUM	U	5380	5380	1300	Qualify	5
135-FF23A-1.0-1.5	JC3801-1A	MANGANESE	U	307	307	1.9		
135-FF23A-3.0-3.5	JC3801-2A	MANGANESE	U	127	127	2.1		
135-FF23A-5.0-5.5	JC3801-3A	MANGANESE	U	263	263	2.3		
135-FF23A-5.0-5.5X	JC3801-4A	MANGANESE	U	280	280	2.2		
135-FF23A-7.0-7.5	JC3801-5A	MANGANESE	U	272	272	1.8		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-FF23A-9.0-9.5	JC3801-6A	MANGANESE	U	306	306	1.8		
135-FF23A-11.0-11.5	JC3801-7A	MANGANESE	U	367	367	1.9		
135-FF23A-11.5-12.0	JC3801-8A	MANGANESE	U	143	143	2.0		
135-FF23A-12.0-12.5	JC3801-9A	MANGANESE	U	193	193	3.8	Qualify	5
135-FF23A-1.0-1.5	JC3801-1A	MERCURY	U	0.96	0.96	0.077		
135-FF23A-3.0-3.5	JC3801-2A	MERCURY	U	3.6	3.6	0.20		
135-FF23A-5.0-5.5	JC3801-3A	MERCURY	U	0.74	0.74	0.047	Qualify	4
135-FF23A-5.0-5.5X	JC3801-4A	MERCURY	U	0.37	0.37	0.048	Qualify	4
135-FF23A-7.0-7.5	JC3801-5A	MERCURY	U	0.37	0.37	0.040		
135-FF23A-9.0-9.5	JC3801-6A	MERCURY	U	0.039	0.039	0.037	Negate	1
135-FF23A-11.0-11.5	JC3801-7A	MERCURY	U	0.077	0.077	0.036	Negate	1
135-FF23A-11.5-12.0	JC3801-8A	MERCURY	U	0.23	0.23	0.041		
135-FF23A-12.0-12.5	JC3801-9A	MERCURY	U	0.030B	0.081	0.081	Negate	1,5,6
135-FF23A-1.0-1.5	JC3801-1A	NICKEL	U	40.8	40.8	5.1		
135-FF23A-3.0-3.5	JC3801-2A	NICKEL	U	22.2	22.2	5.6		
135-FF23A-5.0-5.5	JC3801-3A	NICKEL	U	15.7	15.7	6.1		
135-FF23A-5.0-5.5X	JC3801-4A	NICKEL	U	10.9	10.9	5.8		
135-FF23A-7.0-7.5	JC3801-5A	NICKEL	U	15.2	15.2	4.8		
135-FF23A-9.0-9.5	JC3801-6A	NICKEL	U	13.3	13.3	4.9		
135-FF23A-11.0-11.5	JC3801-7A	NICKEL	U	12.1	12.1	5.1		
135-FF23A-11.5-12.0	JC3801-8A	NICKEL	U	13.4	13.4	5.3		
135-FF23A-12.0-12.5	JC3801-9A	NICKEL	U	37.5	37.5	10	Qualify	5
135-FF23A-1.0-1.5	JC3801-1A	POTASSIUM	U	719B	719	1300	Qualify	2,6
135-FF23A-3.0-3.5	JC3801-2A	POTASSIUM	U	762B	762	1400	Qualify	2,6
135-FF23A-5.0-5.5	JC3801-3A	POTASSIUM	U	846B	846	1500	Qualify	2,6
135-FF23A-5.0-5.5X	JC3801-4A	POTASSIUM	U	968B	968	1400	Qualify	2,6

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-FF23A-7.0-7.5	JC3801-5A	POTASSIUM	U	1420	1420	1200	Qualify	2
135-FF23A-9.0-9.5	JC3801-6A	POTASSIUM	U	1340	1340	1200	Qualify	2
135-FF23A-11.0-11.5	JC3801-7A	POTASSIUM	U	1270B	1270	1300	Qualify	2,6
135-FF23A-11.5-12.0	JC3801-8A	POTASSIUM	U	1060B	1060	1300	Qualify	2,6
135-FF23A-12.0-12.5	JC3801-9A	POTASSIUM	U	3200	3200	2500	Qualify	2,5
135-FF23A-1.0-1.5	JC3801-1A	SELENIUM	U	1.1B	1.1	2.6	Qualify	6
135-FF23A-3.0-3.5	JC3801-2A	SELENIUM	U	1.7B	1.7	2.8	Qualify	6
135-FF23A-5.0-5.5	JC3801-3A	SELENIUM	U	0.89B	0.89	3.1	Qualify	4,6
135-FF23A-5.0-5.5X	JC3801-4A	SELENIUM	U	0.40B	0.40	2.9	Qualify	4,6
135-FF23A-12.0-12.5	JC3801-9A	SELENIUM	U	0.99B	0.99	5.1	Qualify	5,6
135-FF23A-12.0-12.5	JC3801-9A	SILVER	U	U	U	1.3	Qualify	5
135-FF23A-1.0-1.5	JC3801-1A	SODIUM	U	325B	325	1300	Qualify	6
135-FF23A-3.0-3.5	JC3801-2A	SODIUM	U	546B	546	1400	Qualify	6
135-FF23A-5.0-5.5	JC3801-3A	SODIUM	U	1280B	1280	1500	Qualify	4,6
135-FF23A-5.0-5.5X	JC3801-4A	SODIUM	U	686B	686	1400	Qualify	4,6
135-FF23A-7.0-7.5	JC3801-5A	SODIUM	U	854B	854	1200	Qualify	6
135-FF23A-9.0-9.5	JC3801-6A	SODIUM	U	720B	720	1200	Qualify	6
135-FF23A-11.0-11.5	JC3801-7A	SODIUM	U	1120B	1120	1300	Qualify	6
135-FF23A-11.5-12.0	JC3801-8A	SODIUM	U	1370	1370	1300		
135-FF23A-12.0-12.5	JC3801-9A	SODIUM	U	8780	8780	2500	Qualify	5
135-FF23A-12.0-12.5	JC3801-9A	THALLIUM	U	U	U	2.5	Qualify	5
135-FF23A-1.0-1.5	JC3801-1A	VANADIUM	U	18.5	18.5	6.4		
135-FF23A-3.0-3.5	JC3801-2A	VANADIUM	U	21.4	21.4	7.0		
135-FF23A-5.0-5.5	JC3801-3A	VANADIUM	U	22.0	22.0	7.7		
135-FF23A-5.0-5.5X	JC3801-4A	VANADIUM	U	18.3	18.3	7.2		
135-FF23A-7.0-7.5	JC3801-5A	VANADIUM	U	29.7	29.7	6.0		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-FF23A-9.0-9.5	JC3801-6A	VANADIUM	U	30.9	30.9	6.2		
135-FF23A-11.0-11.5	JC3801-7A	VANADIUM	U	23.0	23.0	6.3		
135-FF23A-11.5-12.0	JC3801-8A	VANADIUM	U	22.1	22.1	6.7		
135-FF23A-12.0-12.5	JC3801-9A	VANADIUM	U	42.9	42.9	13	Qualify	5
135-FF23A-1.0-1.5	JC3801-1A	ZINC	U	1280	1280	18		
135-FF23A-3.0-3.5	JC3801-2A	ZINC	U	352	352	7.0		
135-FF23A-5.0-5.5	JC3801-3A	ZINC	U	593	593	7.5	Qualify	4
135-FF23A-5.0-5.5X	JC3801-4A	ZINC	U	235	235	7.7	Qualify	4
135-FF23A-7.0-7.5	JC3801-5A	ZINC	U	96.9	96.9	6.5		
135-FF23A-9.0-9.5	JC3801-6A	ZINC	U	60.2	60.2	6.0		
135-FF23A-11.0-11.5	JC3801-7A	ZINC	U	229	229	5.7		
135-FF23A-11.5-12.0	JC3801-8A	ZINC	U	98.4	98.4	6.6		
135-FF23A-12.0-12.5	JC3801-9A	ZINC	U	36.2	36.2	5.0	Qualify	5

Note: A “U” under Method Blank column indicates a nondetect result.
A “U” under the Laboratory Sample Result and Validation Sample Result columns indicates a nondetect result at the RL.

NJDEP Metals Laboratory Footnotes

1. The value reported is less than or equal to 3x the value in the method blank. It is the policy of NJDEP-DPFSR to negate the reported value due to probable foreign contamination unrelated to the actual sample. The end-user, however, is alerted that a reportable quantity of the analyte was detected.

2. The reported value was qualified because the MS/MSD spike recovery was greater than 125 percent.

3. The reported or nondetected value was qualified because the MS/MSD spike recovery was less than 75 percent.

4. The reported value was qualified because the field duplicate exceeded 35 percent RPD for results > 5X the reporting limit.

5. The reported value was qualified because the sample moisture content was greater than 50 percent.

6. The reported result was greater than the MDL but less than the RL and qualified (J) as estimated by the laboratory.

Aqueous Target Analyte Summary Hit List (TAL Metals)

Site Name Narula/Smith Site 135 PDI Soil Sampling
Sampling Date September 14, 2015
Lab Name/ID Accutest, Dayton, NJ
SDG No JC3801A
Sample Matrix Aqueous
Trip Blank ID NA
Field Blank ID 135-FB201509014

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/l)	Laboratory Sample Result (ug/l)	Validation Sample Result (ug/l)	RL (ug/l)	Quality Assurance Decision	NJDEP Validation Footnote
135-FB201509014	JC3801-10A	CALCIUM METAL	U	34.3B	5000	5000	Negate	1
135-FB201509014	JC3801-10A	MANGANESE	U	0.80B	0.80	15	Qualify	2

Note: A “U” under Method Blank column indicates a nondetect result.
A “U” under the Laboratory Sample Result and Validation Sample Result columns indicates a nondetect result at the RL.

Aqueous Metals NJDEP Laboratory Footnotes

1. The value reported is less than or equal to 3x the value in the method blank. It is the policy of NJDEP-DPFSR to negate the reported value due to probable foreign contamination unrelated to the actual sample. The end-user, however, is alerted that a reportable quantity of the analyte was detected.

2. The reported result was greater than the MDL but less than the RL and qualified (J) as estimated by the laboratory.

Soil Target Analyte Summary Hit List (VOCs)

Site Name Narula/Smith Site 135 PDI Soil Sampling
Sampling Date September 14, 2015
Lab Name/ID Accutest, Dayton, NJ
SDG No JC3801A
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID 135-FB201509014

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-FF23A-1.0-1.5	JC3801-1A	ACETONE	U	24.6	24.6	12		
135-FF23A-1.0-1.5	JC3801-1A	BENZENE	U	0.21J	0.21	0.61	Qualify	4
135-FF23A-11.0-11.5	JC3801-7A	2-BUTANONE (MEK)	U	9.7J	9.7	11	Qualify	4
135-FF23A-11.0-11.5	JC3801-7A	ISOPROPYLBENZENE	U	1.3J	1.3	2.3	Qualify	4
135-FF23A-11.0-11.5	JC3801-7A	ACETONE	U	38.2	38.2	11		
135-FF23A-11.5-12.0	JC3801-8A	ACETONE	U	16.7	16.7	14		
135-FF23A-11.5-12.0	JC3801-8A	CARBON DISULFIDE	U	2.7J	2.7	2.8	Qualify	4
135-FF23A-12.0-12.5	JC3801-9A	ETHYLBENZENE	U	U	U	4.9	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	STYRENE (MONOMER)	U	U	U	9.9	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	1,1,2,2-TETRACHLOROETHANE	U	U	U	9.9	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	1,2,3-TRICHLOROBENZENE	U	U	U	25	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	O-XYLENE	U	U	U	4.9	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	1,2-DICHLOROBENZENE	U	U	U	4.9	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	U	U	U	9.9	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	ISOPROPYLBENZENE	U	U	U	9.9	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	M+P-XYLENE	U	U	U	4.9	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	CIS-1,3-DICHLOROPROPENE	U	U	U	9.9	Qualify	2

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-FF23A-12.0-12.5	JC3801-9A	TRANS-1,3-DICHLOROPROPENE	U	U	U	9.9	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	1,4-DICHLOROBENZENE	U	U	U	4.9	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	1,2-DIBROMOETHANE(EDB)	U	U	U	4.9	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	1,2-DICHLOROETHANE	U	U	U	4.9	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	4-METHYL-2-PENTANONE (MIBK)	U	U	U	25	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	METHYLCYCLOHEXANE	U	U	U	9.9	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	TOLUENE	U	1.2J	1.2	4.9	Qualify	2,4
135-FF23A-12.0-12.5	JC3801-9A	CHLOROBENZENE	U	U	U	9.9	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	CYCLOHEXANE	U	U	U	9.9	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	1,2,4-TRICHLOROBENZENE	U	U	U	25	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	CHLORODIBROMOMETHANE	U	U	U	9.9	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	TETRACHLOROETHENE	U	U	U	9.9	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	XYLENES	U	U	U	4.9	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	CIS-1,2-DICHLOROETHENE	U	U	U	4.9	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	TRANS-1,2-DICHLOROETHENE	U	U	U	4.9	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	METHYL-TERT-BUTYL ETHER	U	U	U	4.9	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	M-DICHLOROBENZENE	U	U	U	4.9	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	CARBON TETRACHLORIDE	U	U	U	9.9	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	METHYL N-BUTYL KETONE	U	U	U	25	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	ACETONE	U	26.4J	26.4	49	Qualify	2,4
135-FF23A-12.0-12.5	JC3801-9A	CHLOROFORM	U	U	U	9.9	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	BENZENE	U	1.1J	1.1	2.5	Qualify	2,4
135-FF23A-12.0-12.5	JC3801-9A	1,1,1-TRICHLOROETHANE	U	U	U	9.9	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	BROMOMETHANE	U	U	U	25	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	CHLOROMETHANE	U	U	U	25	Qualify	2

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-FF23A-12.0-12.5	JC3801-9A	CHLOROBROMOMETHANE	U	U	U	25	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	CHLOROETHANE	U	U	U	25	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	VINYL CHLORIDE	U	U	U	9.9	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	DICHLOROMETHANE	U	U	U	25	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	CARBON DISULFIDE	U	3.3J	3.3	9.9	Qualify	2,3,4
135-FF23A-12.0-12.5	JC3801-9A	TRIBROMOMETHANE	U	U	U	25	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	BROMODICHLOROMETHANE	U	U	U	9.9	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	1,1-DICHLOROETHANE	U	U	U	4.9	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	1,1-DICHLOROETHYLENE	U	U	U	4.9	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	TRICHLOROFLUOROMETHANE	U	U	U	25	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	DICHLORODIFLUOROMETHANE	U	U	U	25	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	1,1,2-TRICHLOROTRIFLUOROETHANE	U	U	U	25	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	1,2-DICHLOROPROPANE	U	U	U	9.9	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	2-BUTANONE (MEK)	U	U	U	49	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	1,1,2-TRICHLOROETHANE	U	U	U	9.9	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	TRICHLOROETHYLENE	U	U	U	4.9	Qualify	2
135-FF23A-12.0-12.5	JC3801-9A	METHYL ACETATE	U	U	U	25	Qualify	2
135-FF23A-3.0-3.5	JC3801-2A	ETHYLBENZENE	U	1.1J	1.1	3.8	Qualify	4
135-FF23A-3.0-3.5	JC3801-2A	XYLENES	U	1.3J	1.3	3.8	Qualify	4
135-FF23A-3.0-3.5	JC3801-2A	ACETONE	U	328	328	38		
135-FF23A-3.0-3.5	JC3801-2A	BENZENE	U	2.6	2.6	1.9		
135-FF23A-3.0-3.5	JC3801-2A	CARBON DISULFIDE	U	4.7J	4.7	7.5	Qualify	4
135-FF23A-3.0-3.5	JC3801-2A	2-BUTANONE (MEK)	U	70.1	70.1	38		
135-FF23A-3.0-3.5	JC3801-2A	ISOPROPYLBENZENE	U	2.6J	2.6	7.5	Qualify	4
135-FF23A-5.0-5.5	JC3801-3A	ETHYLBENZENE	U	13300	13300	180	Qualify	1

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-FF23A-5.0-5.5	JC3801-3A	METHYLCYCLOHEXANE	U	1430	1430	370	Qualify	1
135-FF23A-5.0-5.5	JC3801-3A	TOLUENE	U	397	397	180	Qualify	1
135-FF23A-5.0-5.5	JC3801-3A	CYCLOHEXANE	U	103J	103	370	Qualify	4
135-FF23A-5.0-5.5	JC3801-3A	XYLENES	U	16200	16200	180	Qualify	1
135-FF23A-5.0-5.5	JC3801-3A	BENZENE	U	2070	2070	92	Qualify	1
135-FF23A-5.0-5.5	JC3801-3A	O-XYLENE	U	6240	6240	180	Qualify	1
135-FF23A-5.0-5.5	JC3801-3A	ISOPROPYLBENZENE	U	16000	16000	370	Qualify	1
135-FF23A-5.0-5.5	JC3801-3A	M+P-XYLENE	U	10000	10000	180	Qualify	1
135-FF23A-5.0-5.5X	JC3801-4A	ETHYLBENZENE	U	3.2	3.2	1.5	Qualify	1
135-FF23A-5.0-5.5X	JC3801-4A	XYLENES	U	5.2	5.2	1.5	Qualify	1
135-FF23A-5.0-5.5X	JC3801-4A	ACETONE	U	58.3	58.3	15	Qualify	
135-FF23A-5.0-5.5X	JC3801-4A	BENZENE	U	16.0	16.0	0.77	Qualify	1
135-FF23A-5.0-5.5X	JC3801-4A	CARBON DISULFIDE	U	2.6J	2.6	3.1	Qualify	4
135-FF23A-5.0-5.5X	JC3801-4A	2-BUTANONE (MEK)	U	13.5J	13.5	15	Qualify	4
135-FF23A-5.0-5.5X	JC3801-4A	O-XYLENE	U	2.4	2.4	1.5	Qualify	1
135-FF23A-5.0-5.5X	JC3801-4A	ISOPROPYLBENZENE	U	9.6	9.6	3.1	Qualify	1
135-FF23A-5.0-5.5X	JC3801-4A	M+P-XYLENE	U	2.8	2.8	1.5	Qualify	1
135-FF23A-5.0-5.5X	JC3801-4A	METHYLCYCLOHEXANE	U	0.56J	0.56	3.1	Qualify	1,4
135-FF23A-5.0-5.5X	JC3801-4A	TOLUENE	U	1.0J	1.0	1.5	Qualify	1,4
135-FF23A-7.0-7.5	JC3801-5A	XYLENES	U	1.2J	1.2	1.6	Qualify	4
135-FF23A-7.0-7.5	JC3801-5A	METHYL-TERT-BUTYL ETHER	U	0.45J	0.45	1.6	Qualify	4
135-FF23A-7.0-7.5	JC3801-5A	ACETONE	U	111	111	16		
135-FF23A-7.0-7.5	JC3801-5A	BENZENE	U	0.32J	0.32	0.82	Qualify	4
135-FF23A-7.0-7.5	JC3801-5A	CARBON DISULFIDE	U	1.1J	1.1	3.3	Qualify	4
135-FF23A-7.0-7.5	JC3801-5A	2-BUTANONE (MEK)	U	25.0	25.0	16		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-FF23A-7.0-7.5	JC3801-5A	ISOPROPYLBENZENE	U	6.1	6.1	3.3		
135-FF23A-7.0-7.5	JC3801-5A	M+P-XYLENE	U	0.77J	0.77	1.6	Qualify	4
135-FF23A-9.0-9.5	JC3801-6A	XYLENES	U	0.57J	0.57	1.4	Qualify	4
135-FF23A-9.0-9.5	JC3801-6A	METHYL-TERT-BUTYL ETHER	U	0.24J	0.24	1.4	Qualify	4
135-FF23A-9.0-9.5	JC3801-6A	ACETONE	U	41.1	41.1	14		
135-FF23A-9.0-9.5	JC3801-6A	2-BUTANONE (MEK)	U	8.8J	8.8	14	Qualify	4
135-FF23A-9.0-9.5	JC3801-6A	ISOPROPYLBENZENE	U	3.2	3.2	2.8		

Note: A “U” under Method Blank column indicates a nondetect result.
A “U” under the Laboratory Sample Result and Validation Sample Result columns indicates a nondetect result at the RL.

NJDEP Laboratory Footnote

1. The reported or nondetected value was qualified because the field duplicate results were outside control limits for RPD
2. The reported value was qualified because the percent solids was <50%.
3. The reported or nondetected value was qualified because the MS/MSD spike recovery was below the lower control limit.
4. The reported value was qualified as estimated because it was less than the reporting limit (RL) but greater than the method detection limit (MDL).

Soil Target Analyte Summary Hit List (SVOCs)

Site Name Narula/Smith Site 135 PDI Soil Sampling
Sampling Date September 14, 2015
Lab Name/ID Accutest, Dayton, NJ
SDG No JC3801A
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID 135-FB201509014

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-FF23A-1.0-1.5	JC3801-1A	ACETOPHENONE	U	17.7J	17.7	200	Qualify	4
135-FF23A-1.0-1.5	JC3801-1A	1-1'-BIPHENYL	U	59.4J	59.4	82	Qualify	4
135-FF23A-1.0-1.5	JC3801-1A	2-METHYLNAPHTHALENE	U	196	196	82		
135-FF23A-1.0-1.5	JC3801-1A	NAPHTHALENE	U	348	348	41		
135-FF23A-1.0-1.5	JC3801-1A	FLUORENE	U	408	408	41		
135-FF23A-1.0-1.5	JC3801-1A	CARBAZOLE	U	342	342	82		
135-FF23A-1.0-1.5	JC3801-1A	ANTHRACENE	U	901	901	41		
135-FF23A-1.0-1.5	JC3801-1A	PYRENE	U	3070	3070	41		
135-FF23A-1.0-1.5	JC3801-1A	DIBENZOFURAN	U	284	284	82		
135-FF23A-1.0-1.5	JC3801-1A	BENZO(G,H,I)PERYLENE	U	937	937	41		
135-FF23A-1.0-1.5	JC3801-1A	INDENO(1,2,3-CD)PYRENE	U	982	982	41		
135-FF23A-1.0-1.5	JC3801-1A	BENZO(B)FLUORANTHENE	U	1660	1660	41		
135-FF23A-1.0-1.5	JC3801-1A	FLUORANTHENE	U	3280	3280	41		
135-FF23A-1.0-1.5	JC3801-1A	BENZO(K)FLUORANTHENE	U	590	590	41		
135-FF23A-1.0-1.5	JC3801-1A	ACENAPHTHYLENE	U	73.5	73.5	41		
135-FF23A-1.0-1.5	JC3801-1A	CHRYSENE	U	1900	1900	41		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-FF23A-1.0-1.5	JC3801-1A	BENZO(A)PYRENE	U	1380	1380	41		
135-FF23A-1.0-1.5	JC3801-1A	DIBENZO(A,H)ANTHRACENE	U	264	264	41		
135-FF23A-1.0-1.5	JC3801-1A	BENZO(A)ANTHRACENE	U	1630	1630	41		
135-FF23A-1.0-1.5	JC3801-1A	ACENAPHTHENE	U	348	348	41		
135-FF23A-1.0-1.5	JC3801-1A	PHENANTHRENE	U	3950	3950	41		
135-FF23A-1.0-1.5	JC3801-1A	BENZALDEHYDE	U	71.1J	71.1	200	Qualify	4
135-FF23A-11.0-11.5	JC3801-7A	PHENANTHRENE	U	15.6J	15.6	39	Qualify	4
135-FF23A-11.5-12.0	JC3801-8A	NAPHTHALENE	U	22.9J	22.9	39	Qualify	4
135-FF23A-11.5-12.0	JC3801-8A	BENZALDEHYDE	U	66.4J	66.4	200	Qualify	4
135-FF23A-11.5-12.0	JC3801-8A	3+4-METHYLPHENOL	U	40.5J	40.5	79	Qualify	4
135-FF23A-11.5-12.0	JC3801-8A	PYRENE	U	19.3J	19.3	39	Qualify	4
135-FF23A-11.5-12.0	JC3801-8A	BENZO(B)FLUORANTHENE	U	15.6J	15.6	39	Qualify	4
135-FF23A-11.5-12.0	JC3801-8A	FLUORANTHENE	U	24.7J	24.7	39	Qualify	4
135-FF23A-11.5-12.0	JC3801-8A	CHRYSENE	U	17.0J	17.0	39	Qualify	4
135-FF23A-11.5-12.0	JC3801-8A	PHENANTHRENE	U	30.2J	30.2	39	Qualify	4
135-FF23A-12.0-12.5	JC3801-9A	P-NITROANILINE	U	U	U	2600	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	4-NITROPHENOL	U	U	U	5100	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	BENZALDEHYDE	U	U	U	2600	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	4-BROMOPHENYL PHENYL ETHER	U	U	U	1000	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	CAPROLACTAM	U	U	U	1000	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	2,4-DIMETHYLPHENOL	U	U	U	2600	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	3+4-METHYLPHENOL	U	1040	1040	1000	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	P-CHLOROANILINE	U	U	U	2600	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	2,2'-OXYBIS(1-CHLOROPROPANE)	U	U	U	1000	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	PHENOL	U	U	U	1000	Qualify	3

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-FF23A-12.0-12.5	JC3801-9A	BIS(2-CHLOROETHYL)ETHER	U	U	U	1000	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	BIS(-2-CHLOROETHOXY)METHANE	U	U	U	1000	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	BIS(2-ETHYLHEXYL)PHTHALATE	U	U	U	1000	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	DI-N-OCTYL PHTHALATE	U	U	U	1000	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	HEXACHLOROBENZENE	U	U	U	1000	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	ANTHRACENE	U	U	U	510	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	2,4-DICHLOROPHENOL	U	U	U	2600	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	2,4-DINITROTOLUENE	U	U	U	510	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	1,4-DIOXANE	U	U	U	510	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	PYRENE	U	U	U	510	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	DIMETHYL PHTHALATE	U	U	U	1000	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	DIBENZOFURAN	U	U	U	1000	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	BENZO(G,H,I)PERYLENE	U	U	U	510	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	ATRAZINE	U	U	U	1000	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	INDENO(1,2,3-CD)PYRENE	U	U	U	510	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	BENZO(B)FLUORANTHENE	U	U	U	510	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	FLUORANTHENE	U	U	U	510	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	BENZO(K)FLUORANTHENE	U	U	U	510	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	ACENAPHTHYLENE	U	U	U	510	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	CHRYSENE	U	U	U	510	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	BENZO(A)PYRENE	U	U	U	510	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	2,4-DINITROPHENOL	U	U	U	2600	Qualify	1,3
135-FF23A-12.0-12.5	JC3801-9A	DIBENZO(A,H)ANTHRACENE	U	U	U	510	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	4,6-DINITRO-2-METHYLPHENOL	U	U	U	2600	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	BENZO(A)ANTHRACENE	U	U	U	510	Qualify	3

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-FF23A-12.0-12.5	JC3801-9A	2,3,4,6-Tetrachlorophenol	U	U	U	2600	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	4-CHLORO-3-METHYLPHENOL	U	U	U	2600	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	2,6-DINITROTOLUENE	U	U	U	510	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	N-NITROSO-DI-N-PROPYLAMINE	U	U	U	1000	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	HEXACHLOROETHANE	U	U	U	2600	Qualify	1,3
135-FF23A-12.0-12.5	JC3801-9A	4-CHLOROPHENYL PHENYL ETHER	U	U	U	1000	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	HEXACHLOROCYCLOPENTADIENE	U	U	U	5100	Qualify	1,3
135-FF23A-12.0-12.5	JC3801-9A	3,5,5-TRIMETHYL-2-CYCLOHEXENE-1-ONE	U	U	U	1000	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	ACENAPHTHENE	U	U	U	510	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	DIETHYL PHTHALATE	U	U	U	1000	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	DI-N-BUTYLPHTHALATE	U	U	U	1000	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	PHENANTHRENE	U	U	U	510	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	BENZYL BUTYL PHTHALATE	U	U	U	1000	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	N-NITROSODIPHENYLAMINE	U	U	U	2600	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	FLUORENE	U	U	U	510	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	CARBAZOLE	U	U	U	1000	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	HEXACHLORO-1,3-BUTADIENE	U	U	U	510	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	PENTACHLOROPHENOL	U	U	U	2600	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	2,4,6-TRICHLOROPHENOL	U	U	U	2600	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	2-NITROANILINE	U	U	U	2600	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	2-NITROPHENOL	U	U	U	2600	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	NAPHTHALENE	U	U	U	510	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	2-METHYLNAPHTHALENE	U	U	U	1000	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	2-CHLORONAPHTHALENE	U	U	U	1000	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	3,3'-DICHLOROBENZIDINE	U	U	U	1000	Qualify	3

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-FF23A-12.0-12.5	JC3801-9A	1-1'-BIPHENYL	U	U	U	1000	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	2-METHYLPHENOL	U	U	U	1000	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	2-CHLOROPHENOL	U	U	U	1000	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	1,2,4,5-TETRACHLOROBENZENE	U	U	U	2600	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	2,4,5-TRICHLOROPHENOL	U	U	U	2600	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	ACETOPHENONE	U	U	U	2600	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	NITROBENZENE	U	U	U	1000	Qualify	3
135-FF23A-12.0-12.5	JC3801-9A	3-NITROANILINE	U	U	U	2600	Qualify	3
135-FF23A-3.0-3.5	JC3801-2A	ANTHRACENE	U	81.7	81.7	44		
135-FF23A-3.0-3.5	JC3801-2A	PYRENE	U	404	404	44		
135-FF23A-3.0-3.5	JC3801-2A	DIBENZOFURAN	U	54.9J	54.9	88	Qualify	4
135-FF23A-3.0-3.5	JC3801-2A	BENZO(G,H,I)PERYLENE	U	61.4	61.4	44		
135-FF23A-3.0-3.5	JC3801-2A	INDENO(1,2,3-CD)PYRENE	U	56.0	56.0	44		
135-FF23A-3.0-3.5	JC3801-2A	BENZO(B)FLUORANTHENE	U	140	140	44		
135-FF23A-3.0-3.5	JC3801-2A	FLUORANTHENE	U	470	470	44		
135-FF23A-3.0-3.5	JC3801-2A	BENZO(K)FLUORANTHENE	U	44.6	44.6	44		
135-FF23A-3.0-3.5	JC3801-2A	ACENAPHTHYLENE	U	55.0	55.0	44		
135-FF23A-3.0-3.5	JC3801-2A	CHRYSENE	U	148	148	44		
135-FF23A-3.0-3.5	JC3801-2A	BENZO(A)PYRENE	U	92.0	92.0	44		
135-FF23A-3.0-3.5	JC3801-2A	BENZO(A)ANTHRACENE	U	130	130	44		
135-FF23A-3.0-3.5	JC3801-2A	ACENAPHTHENE	U	62.3	62.3	44		
135-FF23A-3.0-3.5	JC3801-2A	PHENANTHRENE	U	450	450	44		
135-FF23A-3.0-3.5	JC3801-2A	FLUORENE	U	65.8	65.8	44		
135-FF23A-3.0-3.5	JC3801-2A	CARBAZOLE	U	59.8J	59.8	88	Qualify	4
135-FF23A-3.0-3.5	JC3801-2A	NAPHTHALENE	U	1310	1310	44		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-FF23A-3.0-3.5	JC3801-2A	2-METHYLNAPHTHALENE	U	117	117	88		
135-FF23A-3.0-3.5	JC3801-2A	1-1'-BIPHENYL	U	31.9J	31.9	88	Qualify	4
135-FF23A-3.0-3.5	JC3801-2A	3+4-METHYLPHENOL	U	188	188	88		
135-FF23A-5.0-5.5	JC3801-3A	3+4-METHYLPHENOL	U	319	319	190	Qualify	2
135-FF23A-5.0-5.5	JC3801-3A	PHENOL	U	225	225	190		
135-FF23A-5.0-5.5	JC3801-3A	ANTHRACENE	U	376	376	97	Qualify	2
135-FF23A-5.0-5.5	JC3801-3A	PYRENE	U	2700	2700	97	Qualify	2
135-FF23A-5.0-5.5	JC3801-3A	DIBENZOFURAN	U	375	375	190	Qualify	2
135-FF23A-5.0-5.5	JC3801-3A	BENZO(G,H,I)PERYLENE	U	303	303	97	Qualify	2
135-FF23A-5.0-5.5	JC3801-3A	INDENO(1,2,3-CD)PYRENE	U	249	249	97	Qualify	2
135-FF23A-5.0-5.5	JC3801-3A	BENZO(B)FLUORANTHENE	U	777	777	97	Qualify	2
135-FF23A-5.0-5.5	JC3801-3A	FLUORANTHENE	U	2930	2930	97	Qualify	2
135-FF23A-5.0-5.5	JC3801-3A	BENZO(K)FLUORANTHENE	U	261	261	97	Qualify	2
135-FF23A-5.0-5.5	JC3801-3A	CHRYSENE	U	1140	1140	97	Qualify	2
135-FF23A-5.0-5.5	JC3801-3A	BENZO(A)PYRENE	U	362	362	97	Qualify	2
135-FF23A-5.0-5.5	JC3801-3A	DIBENZO(A,H)ANTHRACENE	U	80.5J	80.5	97	Qualify	2,4
135-FF23A-5.0-5.5	JC3801-3A	BENZO(A)ANTHRACENE	U	731	731	97	Qualify	2
135-FF23A-5.0-5.5	JC3801-3A	ACENAPHTHENE	U	635	635	97	Qualify	2
135-FF23A-5.0-5.5	JC3801-3A	PHENANTHRENE	U	2750	2750	97	Qualify	2
135-FF23A-5.0-5.5	JC3801-3A	FLUORENE	U	620	620	97	Qualify	2
135-FF23A-5.0-5.5	JC3801-3A	CARBAZOLE	U	587	587	190	Qualify	2
135-FF23A-5.0-5.5	JC3801-3A	2-METHYLNAPHTHALENE	U	2270	2270	190	Qualify	2
135-FF23A-5.0-5.5	JC3801-3A	1-1'-BIPHENYL	U	187J	187	190	Qualify	4
135-FF23A-5.0-5.5	JC3801-3A	NAPHTHALENE	U	26000	26000	480		
135-FF23A-5.0-5.5X	JC3801-4A	3+4-METHYLPHENOL	U	188	188	100	Qualify	2

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-FF23A-5.0-5.5X	JC3801-4A	PHENOL	U	U	U	100	Qualify	2
135-FF23A-5.0-5.5X	JC3801-4A	ANTHRACENE	U	168	168	50	Qualify	2
135-FF23A-5.0-5.5X	JC3801-4A	PYRENE	U	922	922	50	Qualify	2
135-FF23A-5.0-5.5X	JC3801-4A	DIBENZOFURAN	U	170	170	100	Qualify	2
135-FF23A-5.0-5.5X	JC3801-4A	BENZO(G,H,I)PERYLENE	U	146	146	50	Qualify	2
135-FF23A-5.0-5.5X	JC3801-4A	INDENO(1,2,3-CD)PYRENE	U	128	128	50	Qualify	2
135-FF23A-5.0-5.5X	JC3801-4A	BENZO(B)FLUORANTHENE	U	340	340	50	Qualify	2
135-FF23A-5.0-5.5X	JC3801-4A	FLUORANTHENE	U	1040	1040	50	Qualify	2
135-FF23A-5.0-5.5X	JC3801-4A	BENZO(K)FLUORANTHENE	U	109	109	50	Qualify	2
135-FF23A-5.0-5.5X	JC3801-4A	CHRYSENE	U	365	365	50	Qualify	2
135-FF23A-5.0-5.5X	JC3801-4A	BENZO(A)PYRENE	U	202	202	50	Qualify	2
135-FF23A-5.0-5.5X	JC3801-4A	DIBENZO(A,H)ANTHRACENE	U	43.1J	43.1	50	Qualify	2,4
135-FF23A-5.0-5.5X	JC3801-4A	BENZO(A)ANTHRACENE	U	292	292	50	Qualify	2
135-FF23A-5.0-5.5X	JC3801-4A	ACENAPHTHENE	U	248	248	50	Qualify	2
135-FF23A-5.0-5.5X	JC3801-4A	PHENANTHRENE	U	1110	1110	50	Qualify	2
135-FF23A-5.0-5.5X	JC3801-4A	FLUORENE	U	237	237	50	Qualify	2
135-FF23A-5.0-5.5X	JC3801-4A	CARBAZOLE	U	185	185	100	Qualify	2
135-FF23A-5.0-5.5X	JC3801-4A	2-METHYLNAPHTHALENE	U	1220	1220	100	Qualify	2
135-FF23A-5.0-5.5X	JC3801-4A	1-1'-BIPHENYL	U	115	115	100		
135-FF23A-5.0-5.5X	JC3801-4A	NAPHTHALENE	U	16300	16300	500		
135-FF23A-7.0-7.5	JC3801-5A	PYRENE	U	18.9J	18.9	40	Qualify	4
135-FF23A-7.0-7.5	JC3801-5A	FLUORANTHENE	U	22.6J	22.6	40	Qualify	4
135-FF23A-7.0-7.5	JC3801-5A	NAPHTHALENE	U	270	270	40		
135-FF23A-9.0-9.5	JC3801-6A	NAPHTHALENE	U	27.7J	27.7	39	Qualify	4

Note: A “U” under Method Blank column indicates a nondetect result.

A “U” under the Laboratory Sample Result and Validation Sample Result columns indicates a nondetect result at the RL.

NJDEP Laboratory Footnote

1. The reported or nondetected value was qualified because the MS/MSD spike recovery was below the lower control limit.
2. The reported or nondetected value was qualified because the field duplicate results were outside control limits for RPD.
3. The reported value was qualified because the percent solids was <50%.
4. The reported value was qualified as estimated because it was less than the reporting limit (RL) but greater than the method detection limit (MDL).

Aqueous Target Analyte Summary Hit List (SVOCs)

Site Name Narula/Smith Site 135 PDI Soil Sampling
Sampling Date September 14, 2015
Lab Name/ID Accutest, Dayton, NJ
SDG No JC3801A
Sample Matrix Aqueous
Trip Blank ID NA
Field Blank ID 135-FB201509014

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/l)	Laboratory Sample Result (ug/l)	Validation Sample Result (ug/l)	RL (ug/l)	Quality Assurance Decision	NJDEP Validation Footnote
135-FB201509014	JC3801-10A	BIS(2-ETHYLHEXYL)PHTHALATE	U	1.6J	1.6	2.0	Qualify	1

Note: A “U” under Method Blank column indicates a nondetect result.
A “U” under the Laboratory Sample Result and Validation Sample Result columns indicates a nondetect result at the RL.

NJDEP Laboratory Footnote

1. The reported value was qualified as estimated because it was less than the reporting limit (RL) but greater than the method detection limit (MDL).

Attachment B

Data Validation Report Form

Client Name: PPG Industries	**Project Number:** 60314351.GA.DE.PDI.P3
Site Location: Narula/Smith Site 135 PDI Soil Sampling, Jersey City, NJ	**Project Manager:** Scott Mikaelian
Laboratory: Accutest, Dayton, NJ	**Type of Validation:** Limited
Laboratory Job No: : JC3801 A	**Date Checked:** 10/07/2015
Validator: Charlene Livingston Flint	**Peer:** Mary Kozik

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X			
Field I.D. included?	X			
Laboratory I.D. included?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6C?	X			5.1 C
Signed COCs included?	X			
Date of sample collection included?	X			
Date of sample digestion included?	X			
Date of analysis included?	X			
Holding time met QC criteria? (Metals -180 days from sample collection; Mercury - 28 days from sample collection. If HT exceeded by 10 days R all results.	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			
Definitions: MDL - Method Detection Limit; %R - Percent Recovery; RL - Reporting Limit; RPD - Relative Percent Difference; RSD - Relative Standard Deviation :Corr - Correlation Coefficient.				

ITEM	YES	NO	N/A	COMMENTS
Sample dilutions?	X			Several samples and analytes diluted. JC3801-1A PB dil 1:5, Hg dil 1:2 & Zn dil 1:3; JC3801-2A Hg dil 1:5.
Initial calibration documentation included in lab package?			X	N/A for Limited Validation
1) Calibrate daily or each time instrument is set up.			X	
2) ICP (6010) -Blank plus 1 standard? If no, reject (R) data.			X	
3) Hg (7470/7471) -Blank plus 5 standards? If no, reject (R) data.			X	
Initial Calibration Verification Standard (ICV) for ICP (6010) and Initial Calibration Check Standard (ICCS) for Hg (7470/7471) included in lab package?			X	
1) Analyzed immediately after initial calibration? If no, reject (R) data.			X	
2) %R criteria met? (90-110%). If no, J positive results for affected analyte(s) if %R between 80-89% and 111-120% and indicate bias; UJ non-detect results for affected analyte(s) if %R between 80-89%, and R all data for affected analyte(s) if %R <80% or >120%.			X	
3) Spot check ICV/ICCS results for several analytes.			X	
Continuing Calibration Verification Standard (CCV) for ICP (6010) and Calibration Check Standard (CCS) for Hg (7470/7471) included in Lab Package?			X	
1) Analyzed immediately after each ICV/ICC/CB and after every 10 samples? If no, reject (R) data.			X	
2) CCS and CCV from independent source and at mid-level of calibration curve. If no, reject (R) data.			X	
3) %R criteria met? (90-110%R). If no, J positive results for affected analyte(s) if %R between 80-89% and 111-120% and indicate bias; UJ non-detect results for affected analyte(s) if %R between 80-89% and R all data for affected analyte(s) if %R <80% or >120%.			X	
4) Spot check CCV/CCS results for several analytes.			X	
Low Calibration Standard (CRI) included in Lab Package?			X	

ITEM	YES	NO	N/A	COMMENTS
1) %R criteria met? - 50-150% for Co, Mn, Zn, by ICP-MS; Pb, Tl by 6010; 70-130% all others. If no, refer to ILM05.4 NJ SOP 5.A.2 for actions.			X	
Calibration Blanks			X	N/A for Limited Validation
1) Analyzed after daily calibration and after each ICV/ICC/CCV/CCS and after every 10 samples? If no, reject (R) data.			X	
2) Absolute value <3xIDL? If no, -if sample result <10x CB result, qualify affected analyte(s) in associated samples with CB; -if sample result >10xCB result, no qualification.			X	
Method Blank Included in Lab Package?	X			
1) Method blank analyzed with each preparation batch or every SDG, or 1/20 samples? If no, reject (R) data, except no aqueous MB required for FB/EB if only soil samples were analyzed.	X			
2) Method blank analyzed 1/20 samples? If - MB 1/25, J sample results from 21-25; -MB >1/25, R sample results after 25th sample.	X			
3) MB results nondetect? If no, -sample result <3xMB, negate UB; -sample result>3xMB but <10xMB, JB; -sample result >10xMB, no qualification.		X		See nonconformance tables.
4) Negative MB result reported? If yes, -Positive sample result<10xMB, qualify estimated, biased low (J); -Non-detect sample result, qualify UJ, may be false non-detect.		X		
Field Blanks/Equipment Blanks Included in Lab Package?	X			
1) FB/EB result non-detect? If no, -sample result <3xFB/EB, negate U; -sample result>3xFB/EB but <10xMB, J; -sample result >10xFB/EB, no qualification.		X		See nonconformance tables.
ICP Interference Check Sample (ICS) included in Lab Package?	X			
1) Analyzed at beginning of analytical run? If no, reject (R) data.	X			
2) %R criteria met? (80-120%) If no, %R>120%, no qualification if sample result non-detect; %R between 121-150%, J positive results, biased high; %R between 50-79%, J/UJ results, biased low; %R<50% or >150%, reject (R) result	X			Non-spiked analyte <2x RL

ITEM	YES	NO	N/A	COMMENTS
3) Spot check accuracy of %Rs	X			
Matrix Spike/Matrix Spike Duplicate Data Included in Lab Package?	X			
1) MS/MSD %R (75-125%R) and RPD (+20%) criteria met? - %R>125% J positive results for affected analyte(s) for all samples in the same batch/SDG, accept NDs; -%R<75% J/UJ for affected analyte(s) for all samples in the same batch/SDG; - RPD outside +20% J positive results for affected analyte(s) for all samples in the same batch/SDG, accept NDs.		X		See nonconformance tables.
2) Was a sample spiked at the frequency of 1/batch or 20 samples?	X			
3) Was the MS performed on a site sample?	X			JC3801-9A
4) Was the MS performed on a FB/EB or TB? If yes, J all sample data.		X		
Post Digestion Spike			X	
1) %R criteria met? (75-125%R) - %R>125% J positive results for affected analyte(s) for all samples in the same batch/SDG, accept NDs; - %R<75% J/UJ affected analyte(s) for all samples in the same batch/SDG.			X	
2) Was the spike performed on a FB/EB or TB? If yes, J all sample data.			X	
3) Was a sample spiked at the frequency of 1/batch or 20 samples?			X	
Laboratory Duplicate Data Included in Lab Package?		X		
Aqueous - If RPD is >35% for SR≤5xRL estimate (J) results.- If absolute difference is >RL for SR <RL estimate (J) positive and nondetects (UJ).- For Hg – Aq ≤ 20%,			X	
Soil -- If RPD is >50% for SR≤5xRL estimate (J) results.- If absolute difference is >RL for SR <RL estimate (J) positive and nondetects (UJ).- For Hg Soil/Sediment ≤ 35%,			X	
Was a Laboratory Control Sample (LCS) Included in Lab	X			

ITEM	YES	NO	N/A	COMMENTS
Package?				
1) LCS %R criteria met? (80-120%R). If no, J/UJ all affected analytes(s) for all samples in the same batch/SDG.	X			
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples? If no, J/UJ affected analyte(s) for all samples in the same batch/SDG.	X			
Serial Dilution	X			
1) %D (<10%R) criteria met? - If analyte concentration >25xIDL (7000) or >10xIDL (6010) and %D >10% J positive results for affected analyte(s) for all samples in the same batch/SDG, accept NDs.		X		Several compound >10%D but initial concentration < 50 IDL. Zinc > 10%D but less than 10x IDL. No action necessary.
2) Was the frequency 1/batch or 20 samples?	X			
3) Was a site sample used?	X			JC3810-9A
4) Was a FB/EB or TB used? If yes, J all sample data.		X		
5) Spot check accuracy of %Ds.	X			
Field Duplicate Data included in Lab Package?	X			JC3810-3A and -4A
Aqueous - If RPD is >30% for SR≤5xRL estimate (J) results.- If absolute difference is >RL for SR <RL estimate (J) positive and nondetects (UJ).-			X	
Soil -- If RPD is >50% for SR≤5xRL estimate (J) results.- If absolute difference is >RL for SR <RL estimate (J) positive and nondetects (UJ).-		X		See nonconformance tables.
Percent Solids data included in Lab Package?	X			
1) %Solids criteria (Reg 2 criteria) met? (>/=50%)		X		See nonconformance tables.

Blanks

Analyte	Result		3X	10X	Actions	Associated Samples
Soil Method Blank	**(mg/kg)**		**(mg/kg)**	**(mg/kg)**		
Barium	0.089		0.267	0.89	OK, >10X MB	135-FF23A-1.0-1.5, 135-FF23A-3.0-3.5, 135-FF23A-5.0-5.5, 135-FF23A-5.0-5.5X, 135-FF23A-7.0-7.5, 135-FF23A-9.0-9.5, 135-FF23A-11.0-11.5, 135-FF23A-11.5-12.0, 135-FF23A-12.0-12.5
Calcium	19.7		59.1	197	OK, >10X MB	135-FF23A-1.0-1.5, 135-FF23A-3.0-3.5, 135-FF23A-5.0-5.5, 135-FF23A-5.0-5.5X, 135-FF23A-7.0-7.5, 135-FF23A-9.0-9.5, 135-FF23A-11.0-11.5, 135-FF23A-11.5-12.0, 135-FF23A-12.0-12.5
Chromium	0.12		0.36	1.2	OK, >10X MB	135-FF23A-1.0-1.5, 135-FF23A-3.0-3.5, 135-FF23A-5.0-5.5, 135-FF23A-5.0-5.5X, 135-FF23A-7.0-7.5, 135-FF23A-9.0-9.5, 135-FF23A-11.0-11.5, 135-FF23A-11.5-12.0, 135-FF23A-12.0-12.5
Lead	0.03		0.09	0.3	OK, >10X MB	135-FF23A-1.0-1.5, 135-FF23A-3.0-3.5, 135-FF23A-5.0-5.5, 135-FF23A-5.0-5.5X, 135-FF23A-7.0-7.5, 135-FF23A-9.0-9.5, 135-FF23A-11.0-11.5, 135-FF23A-11.5-12.0, 135-FF23A-12.0-12.5

Manganese	0.099		0.297	0.99	OK, >10X MB	135-FF23A-1.0-1.5, 135-FF23A-3.0-3.5, 135-FF23A-5.0-5.5, 135-FF23A-5.0-5.5X, 135-FF23A-7.0-7.5, 135-FF23A-9.0-9.5, 135-FF23A-11.0-11.5, 135-FF23A-11.5-12.0, 135-FF23A-12.0-12.5
Sodium	7.8		23.4	78	OK, >10X MB	135-FF23A-1.0-1.5, 135-FF23A-3.0-3.5, 135-FF23A-5.0-5.5, 135-FF23A-5.0-5.5X, 135-FF23A-7.0-7.5, 135-FF23A-9.0-9.5, 135-FF23A-11.0-11.5, 135-FF23A-11.5-12.0, 135-FF23A-12.0-12.5
Mercury	0.0081		0.0243	0.081	OK, JC3801-(1A-5A), Negate, -6A, -7A, & -9A	135-FF23A-1.0-1.5, 135-FF23A-3.0-3.5, 135-FF23A-5.0-5.5, 135-FF23A-5.0-5.5X, 135-FF23A-7.0-7.5, 135-FF23A-9.0-9.5, 135-FF23A-11.0-11.5, 135-FF23A-11.5-12.0, 135-FF23A-12.0-12.5
Aqueous Method Blank	**(ug/l)**		**(ug/l)**	**(ug/l)**		
Calcium	61.6		184.8	616	Negate, <3X MB	133-FB20150914
Copper	2.4		7.2	24	OK,ND	133-FB20150914
Sodium	36.5		109.5	365	OK,ND	133-FB20150914
Zinc	8.5		25.5	85	OK,ND	133-FB20150914
Equipment Blank	**(ug/l)**	**(mg/kg)**	**(mg/kg)**	**(mg/kg)**		
Manganese	0.8	0.08	0.24	0.8	>10X FB; OK	135-FF23A-1.0-1.5, 135-FF23A-3.0-3.5, 135-FF23A-5.0-5.5, 135-FF23A-5.0-5.5X, 135-FF23A-7.0-7.5, 135-FF23A-9.0-9.5, 135-FF23A-11.0-11.5, 135-FF23A-11.5-12.0, 135-FF23A-12.0-12.5

Matrix Spikes

Sample ID	Analyte	% Recovery	Lower Limit	Upper Limit	RPD	RPD Limit	Action
135-FF23A-12.0-12.5	ALUMINUM	164.8	75	125	0	20	Estimate (J)
135-FF23A-12.0-12.5	ANTIMONY	65.1	75	125	10	20	Estimate (J/UJ)
135-FF23A-12.0-12.5	IRON	23.8	75	125	20.6	20	None, SR>4X spike
135-FF23A-12.0-12.5	POTASSIUM	129.2	75	125	0.8	20	Estimate (J)

Field Duplicates

Sample ID	Duplicate ID	Analyte	Sample Result	Qual	Duplicate Result	Qual	QL	Units	RPD
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	MERCURY	0.74		0.37		0.047	mg/kg	66.7
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	SELENIUM	0.89	B	0.4	B	3.1	mg/kg	76
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	ANTIMONY	2	B	0.72	B	3.1	mg/kg	94.1
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	CADMIUM	4		0.48	B	0.77	mg/kg	157.1
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	ARSENIC	12.6		5.7		3.1	mg/kg	75.4
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	COPPER	225		62.8		3.8	mg/kg	112.7
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	LEAD	396		202		3.1	mg/kg	64.9
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	ZINC	593		235		7.5	mg/kg	86.5
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	SODIUM	1280	B	686	B	1500	mg/kg	60.4
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	CALCIUM METAL	6990		13600		770	mg/kg	64.2

Percent Solids

Sample ID	Percent Solids (%)	Status
135-FF23A-12.0-12.5	37.5	<50%

Client Name: PPG Industries	**Project Number:** 60314351.GA.DE.PDI.P3
Site Location: Narula/Smith Site 135 PDI Soil Sampling, Jersey City, NJ	**Project Manager:** Scott Mikaelian
Laboratory: Accutest, Dayton, NJ	**Type of Validation:** Limited
Laboratory Job No: JC3801A	**Date Checked: 1**0/07/2015
Validator: Charlene Livingston Flint	**Peer:** Mary Kozik

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X			
Field I.D. included?	X			
Laboratory I.D. included?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6C?	X			5.1 ºC
Signed COCs included?	X			
Date of sample collection included?	X			
Date of analysis included?	X			
Holding time to analysis met criteria? Aqueous (unpreserved) - 7 days from collection to analysis. Aqueous (preserved) - 14 days from collection to analysis. Soils - 14 days from collection to analysis.	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			

Definitions: MDL - Method Detection Limit; %R - Percent Recovery; RL - Reporting Limit; RPD - Relative Percent Difference; RSD - Relative Standard Deviation :Corr - Correlation Coefficient.

ITEM	YES	NO	N/A	COMMENTS
Sample dilutions?		X		
Method Blank Included in Lab Package?	X			
1) Method blank analyzed with each preparation batch?	X			
2) Absolute value should not exceed RL.	X			
Trip Blanks/Field Blanks/Equipment Blanks Included in Lab Package?	X			
1) TB/FB/EB results non-detect?	X			
Surrogate Data Included?	X			
1) Is %R criteria (laboratory criteria) met?	X			
Matrix Spike/Matrix Spike Duplicate Data Included in Lab Package?	X			JC3801-9A
1) %R and RPD (laboratory criteria) met?	X			See nonconformance tables.
2) Was the spike concentration at the same concentration as the LCS?	X			
3) Was a sample spiked at the frequency of 1 per 20 samples?	X			
Was a Laboratory Control Sample (LCS) Included in Lab Package?	X			
1) LCS %R criteria met? (laboratory criteria)	X			
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples?	X			
Field Duplicate Data included in Lab Package?	X			JC3801-3A and -4A
1) %RPD criteria met?		X		See nonconformance tables.
Percent Solids data included in Lab Package?	X			
1) %Solids criteria (Reg 2 criteria) met? (>/=50%)		X		See nonconformance tables.

Matrix Spikes

Sample ID	Analyte	% MS Recovery	% MSD Recovery	Lower Limit	Upper Limit	RPD	RPD Limit	Action
135-FF23A-12.0-12.5	CARBON DISULFIDE	57	23	34	146	82	31	Estimate (J)
135-FF23A-12.0-12.5	CIS-1,3-DICHLOROPROPENE	57	43	41	144	29	26	Estimate (J)
135-FF23A-12.0-12.5	STYRENE (MONOMER)	48	34	32	156	35	31	Estimate (J)

Field Duplicates

Sample ID	Duplicate ID	Analyte	Sample Result	Qual	Duplicate Result	Qual	QL	Units	RPD	Action
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	CYCLOHEXANE	103	J	3.1	U	370	ug/kg	188.3	None, SR<2x RL
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	CARBON DISULFIDE	370	U	2.6	J	370	ug/kg	197.2	None, SR<2x RL
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	TOLUENE	397		1	J	180	ug/kg	199	Estimate (J)
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	METHYLCYCLOHEXANE	1430		0.56	J	370	ug/kg	199.8	Estimate (J)
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	2-BUTANONE (MEK)	1800	U	13.5	J	1800	ug/kg	197	None, SR<2x RL
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	ACETONE	1800	U	58.3		1800	ug/kg	187.5	None, SR<2x RL
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	BENZENE	2070		16		92	ug/kg	196.9	Estimate (J)
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	O-XYLENE	6240		2.4		180	ug/kg	199.8	Estimate (J)
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	M+P-XYLENE	10000		2.8		180	ug/kg	199.9	Estimate (J)
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	ETHYLBENZENE	13300		3.2		180	ug/kg	199.9	Estimate (J)
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	ISOPROPYLBENZENE	16000		9.6		370	ug/kg	199.8	Estimate (J)
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	XYLENES	16200		5.2		180	ug/kg	199.9	Estimate (J)

Percent Solids

Sample ID	Percent Solids (%)	Status
135-FF23A-12.0-12.5	37.5	<50%

Client Name: PPG Industries	**Project Number:** 60314351.GA.DE.PDI.P3
Site Location: Narula/Smith Site 135 PDI Soil Sampling, Jersey City, NJ	**Project Manager:** Scott Mikaelian
Laboratory: Accutest, Dayton, NJ	**Type of Validation:** Limited
Laboratory Job No: JC3801A	**Date Checked:** 10/07/2015
Validator: Charlene Livingston Flint	**Peer:** Mary Kozik

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X			
Field I.D. included?	X			
Laboratory I.D. included?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6C?	X			5.1º C
Signed COCs included?	X			
Date of sample collection included?	X			
Date of sample extraction included?	X			
Date of analysis included?	X			
Holding time to analysis met criteria? Aqueous (unpreserved) - 7 days from collection to analysis. Aqueous (preserved) - 14 days from collection to analysis. Soils - 14 days from collection to analysis.	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			

Definitions: MDL - Method Detection Limit; %R - Percent Recovery; RL - Reporting Limit; RPD - Relative Percent Difference; RSD - Relative Standard Deviation :Corr - Correlation Coefficient.

ITEM	YES	NO	N/A	COMMENTS
Sample dilutions?	X			JC3801-3A dil 1:2 for most compounds, dil 1:10 for naphthalene; Jc3801-4A dil 1:10 for naphthalene
Method Blank Included in Lab Package?	X			
1) Method blank analyzed with each preparation batch?	X			
2) Absolute value should not exceed RL.	X			
Trip Blanks/Field Blanks/Equipment Blanks Included in Lab Package?	X			
1) TB/FB/EB results non-detect?		X		Bis(2-ethylhexyl)phthalate detected. Samples ND
Surrogate Data Included?	X			
1) Is %R criteria (laboratory criteria) met?	X			
Matrix Spike/Matrix Spike Duplicate Data Included in Lab Package?	X			JC3801-9A
1) %R and RPD (laboratory criteria) met?		X		See nonconformance tables.
2) Was the spike concentration at the same concentration as the LCS?	X			
3) Was a sample spiked at the frequency of 1 per 20 samples?	X			
Was a Laboratory Control Sample (LCS) Included in Lab Package?	X			
1) LCS %R criteria met? (laboratory criteria)	X			
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples?	X			
Field Duplicate Data included in Lab Package?	X			JC3801-3A & -4A
1) %RPD criteria met?	X			
Percent Solids data included in Lab Package?	X			
1) %Solids criteria (Reg 2 criteria) met? (>/=50%)		X		See nonconformance tables.

Field Blanks

Blank ID	Analyte	Result	QL	Units	Associated Samples
135-FB201509014	BIS(2-ETHYLHEXYL)PHTHALATE	1.6	2.0	ug/l	135-FF23A-1.0-1.5, 135-FF23A-3.0-3.5, 135-FF23A-5.0-5.5, 135-FF23A-5.0-5.5X, 135-FF23A-7.0-7.5, 135-FF23A-9.0-9.5, 135-FF23A-11.0-11.5, 135-FF23A-11.5-12.0, 135-FF23A-12.0-12.5

Matrix Spikes

Sample ID	Analyte	% MS Recovery	% MSD Recovery	Lower Limit	Upper Limit	RPD	RPD Limit	Action
135-FF23A-12.0-12.5	2,4-DINITROPHENOL	8	8	10	110	0	51	Estimate (UJ)
135-FF23A-12.0-12.5	HEXACHLOROCYCLOPENTADIENE	0	0	10	127	0	46	Estimate (UJ)
135-FF23A-12.0-12.5	HEXACHLOROETHANE	26	20	21	109	21	38	Estimate (UJ)

Field Duplicates

Sample ID	Duplicate ID	Analyte	Sample Result	Qual	Duplicate Result	Qual	QL	Units	RPD	Action
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	DIBENZO(A,H)ANTHRACENE	80.5	J	43.1	J	97	ug/kg	60.5	Estimate (J)
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	PHENOL	225		100	U	190	ug/kg	76.9	None, SR<2x RL
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	INDENO(1,2,3-CD)PYRENE	249		128		97	ug/kg	64.2	Estimate (J)
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	BENZO(K)FLUORANTHENE	261		109		97	ug/kg	82.2	Estimate (J)
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	BENZO(G,H,I)PERYLENE	303		146		97	ug/kg	69.9	Estimate (J)
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	3+4-METHYLPHENOL	319		188		190	ug/kg	51.7	Estimate (J)
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	BENZO(A)PYRENE	362		202		97	ug/kg	56.7	Estimate (J)
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	DIBENZOFURAN	375		170		190	ug/kg	75.2	Estimate (J)
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	ANTHRACENE	376		168		97	ug/kg	76.5	Estimate (J)
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	CARBAZOLE	587		185		190	ug/kg	104.1	Estimate (J)

Sample ID	Duplicate ID	Analyte	Sample Result	Qual	Duplicate Result	Qual	QL	Units	RPD	Action
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	FLUORENE	620		237		97	ug/kg	89.4	Estimate (J)
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	ACENAPHTHENE	635		248		97	ug/kg	87.7	Estimate (J)
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	BENZO(A)ANTHRACENE	731		292		97	ug/kg	85.8	Estimate (J)
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	BENZO(B)FLUORANTHENE	777		340		97	ug/kg	78.2	Estimate (J)
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	CHRYSENE	1140		365		97	ug/kg	103	Estimate (J)
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	2-METHYLNAPHTHALENE	2270		1220		190	ug/kg	60.2	Estimate (J)
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	PYRENE	2700		922		97	ug/kg	98.2	Estimate (J)
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	PHENANTHRENE	2750		1110		97	ug/kg	85	Estimate (J)
135-FF23A-5.0-5.5	135-FF23A-5.0-5.5X	FLUORANTHENE	2930		1040		97	ug/kg	95.2	Estimate (J)

Percent Solids

Sample ID	Percent Solids (%)	Status
135-FF23A-12.0-12.5	37.5	<50%

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Memorandum

To	Kathy Whooley	Page	1
Subject	NJDEP Data Quality Assessment/Data Usability Evaluation Organic and Inorganic Analyses PPG Site 135 Narula (P3C) LSRP Sampling, Jersey City, NJ Accutest Job Numbers: JC3898 and JC3898R		
From	Paula DiMattei		
Reviewed by:	Mary Kozik		
Date	11/10/2015	60322149-8.0	

A New Jersey Department of Environmental Protection (NJDEP) Data Quality Assessment (DQA)/Data Usability Evaluation (DUE) was performed on the data for the samples tabulated below collected on September 15, 2015 in support of the PPG Site 135 Narula (P3C) LSRP Sampling located in Jersey City, NJ. The samples were submitted to Accutest Laboratories (Accutest) in Dayton, NJ for analysis. Accutest reported the samples under Job Numbers JC3898 and JC3898R.

This DQA/DUE review was performed with reference to:

- New Jersey Department of Environmental Protection (NJDEP) document *Data Quality Assessment and data Usability Evaluation Technical Guidance (version 1.0)* (April 2014);
- NJDEP document *Data of Known Quality Protocols (DKQP)Technical Guidance (version 1.0*) (April 2014)
- Region 2 Data Validation Standard Operating Procedures (SOPs): *Semivolatile Data Validation* (HW-35 Revision 2), *ICP-AES Data Validation* (HW-2a Revision 15) and *Mercury and Cyanide Data Validation* (HW-2c Revision 15).

Data for the following samples and analytical fractions were assessed:

Sample ID	Analysis	Protocols/Method(s)
135-SI-DD31A-0.5-1.0	PAH EPH Metals	NJDEP DKQP SW-8270D NJ DEP DKQP NJDEP EPH Method NJ DEP DKQP SW-6010C/7470A/7471B
135-SI-DD31A-10.0-10.5		
135-SI-DD31A-2.6-3.1		
135-SI-DD31A-6.2-6.7		
PAH – Polynuclear Aromatic Compounds EPH – Extractable Petroleum Hydrocarbons		

DATA QUALITY ASSESSMENT REVIEW ELEMENTS

The data quality assessment was based on the following parameters (as applicable to the method):

- * Chain-of-custody (COC)/sample integrity
- * Holding times and sample preservation
- * MS Tuning
- * Initial and continuing calibration results
- Laboratory method blanks/trip blanks/equipment blanks
- * Surrogate spike recoveries (%Rs)
- NA Matrix spike (MS) and/or matrix spike duplicate (MSD) results
- NA Laboratory duplicate results
- Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
- NA Field duplicate results
- * Internal Standard results
- * General reporting issues

An "NA" indicates that the parameter was not included as part of this data set, and therefore not reviewed. The symbol (*) indicates that no qualifications were required for these parameters or sample results are not affected due to nonconformances. QC criteria requiring qualification are summarized below. In addition, other issues that were noted during the data quality assessment/data usability evaluation, but did not result in qualification of data, may be discussed for informational purposes only.

Laboratory Method Blanks/Trip Blanks/Equipment Blanks

Metals

The positive results for mercury in samples 135-SI-DD31A-0.5-1.0, 135-SI-DD31A-10.0-10.5 and 135-SI-DD31A-6.2-6.7 are considered usable as estimated results which may be biased low (J-) as a result of negative instrument drift.

LCS/LCSD Results

PAH

The %Rs for acenaphthene, acenaphthylene, benzo(a)anthracene, chrysene, fluoranthene, fluorene, 2-methylnaphthalene, naphthalene and pyrene in the LCS associated with sample 135-SI-DD31A-2.6-3.1 fell below the QC acceptance criteria. Consequently, the positive and nondetect results for these compounds in the associated sample are considered usable as estimated results which may be biased low (J-/UJ). The %R for benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, dibenz(a,h)anthracene and indeno(1,2,3-cd)pyrene fell below the QC acceptance criteria and the relative percent difference exceeded the QC acceptance criteria in the LCS associated with sample 135-SI-DD31A-2.6-3.1. Consequently, the positive results for these compounds in the associated sample are considered usable as estimated results (J).

General Reporting Issue

The data were evaluated according the appropriate protocol as stipulated in the New Jersey Department of Environmental Protection document *Data of Known Quality Protocols (DKQP)Technical Guidance,* version 1.0 (April 2014). The DKQ Data of Known Quality Conformance/Non-conformance Summary Questionnaire was reviewed and indicates that the requirements for "Data of Known Quality" were met.

Some metals results in select soil samples were analyzed at a dilution as a result of the elevated concentration of target analytes or matrix interferences present in the samples. Sample quantitation limits were raised accordingly.

ATTACHMENTS

Attachment A: DKQP Checklists
Attachment B: Reporting Limit Exceedances

Attachment A

DKQP Checklists

SVOC SW8270D_DKQP

Laboratory: Accutest, Dayton, NJ
Laboratory SDG/Job No: JC3898R
Data of Known Quality (LSRP DQA/DUE NJ)
Number of Samples/Matrix: 1 soil
Analysis (Include Method #): SW-846 8270D

Client/Site Name: Narula
Project Number: 60322149-8.0
Date: November 10, 2015
Validator: Paula DiMattei

Review Item	*Required Deliverable	DKQP Criteria[#]	Criteria Met? (Yes/No)	Qualification? (Yes/No)	Comments
Data of Known Quality Questionnaire	X	Data of Known Quality met?	Yes	No	
		Answers on form that are "NO"	--	--	#4: QA/QC performance criteria met? #5b: RLs met? #7: project specific MS/MD?
Chain of Custody		Analyses agree with COC	Yes	No	PAHs only
Sample Preservation		<6°C; allow for <2°C if samples intact sample preservation per SW846 Chapt. 4 table 4-1	Yes	No	5.7ºC
Holding Time		Extraction 7-days (AQ) & 14-days (Solid); 40 days to analysis (AQ & Solid) If soil/sediment samples are frozen, HT arrested and extraction HT continues when thawed. Solid samples can be maintained frozen from 1 year from collection	Yes	No	
Method Blanks	X	<RLs except phthalates <5xRLs	Yes	No	
Equipment Blanks		<RLs	NA	NA	None submitted
GC/MS Tunes		Once daily before analysis; all samples analyzed within 12 hrs of tune (method)	Yes	No	

Review Item	*Required Deliverable	DKQP Criteria[#]	Criteria Met? (Yes/No)	Qualification? (Yes/No)	Comments
Initial Calibration		5 pt curve for all compds and lowest standard must be< RL; Full scan: RF see Table 4 of method for minimum RF criteria; %RSD ≤20 for all compounds or r>0.99; SIM: %RSD < 20 or r> 0.99 for all compounds	Yes	No	
Continuing Calibration Verification		Every 12 hrs after tune & before sample analysis; Full scan: %D or %drift < 20% for CCCs[1] and <30% for all other compds. SIM: %D or %drift < 30%.	Yes	No	
Matrix Spike	X^	Must contain all target compounds; 70-130% for all compds except difficult compds** which must meet 20-160%; RPDs <20% for waters and < 30% for solids	NA	NA	Batch QC
Matrix Spike Duplicate			NA	NA	Batch QC
Laboratory Duplicate	X^	RPD < 20% for waters and < 30% for solids for results >2x RL	NA	NA	None performed
Field Duplicate		Aqueous RPD ≤30%; Soils RPD ≤50% with results >2xRL; Professional judgment for results <2xRL	NA	NA	None submitted in this data set.
Surrogate Standards	X	Minimum of 3 acids and 3 B/N surrogates. Solids: 30-130% (acids & BN); AQ: 15-110% (acid) & 30-130% (BN)	Yes	No	(only 2 surrogates reported; prof judgment to accept since only PAHs were reported)
Laboratory Control Standards	X	Must be matrix-matched; Must contain all target compounds; 70-130% for all compds except difficult compds** which must meet 20-160%	No	Yes	OP87502A-BS1/BSD: Associated with 135-SI-DD31A-2.6-3.1 Acenaphthene: 58%/67% Acenaphthylene: 63%/ok Benzo(a)anthracene: 65%/ok Chrysene: 61%/ok Fluoranthene: 66%/ok

Review Item	*Required Deliverable	DKQP Criteria#	Criteria Met? (Yes/No)	Qualification? (Yes/No)	Comments
					Fluorene: 62%/69% 2-methylnaphthalene: 66%/ok Naphthalene: 59%/64% Pyrene: 61%/ok Estimate (J-/UJ) Benzo(a)pyrene: 66%/ok RPD=39 Benzo(b)fluoranthene: 51%/ok RPD=48 Benzo(ghi)perylene: 55%/ok RPD=43 Benzo(k)fluoranthene: 56%/ok RPD=45 Dibenz(a,h)anthracene:53%/ok RPD=44 Indeno(1,2,3-cd)pyrene: 53%/ok RPD=45 Estimate (J).
Internal Standards		Minimum of 6 IS; 50-200% of CC standard and RTs + 30 secs. From midpoint ICAL std	Yes	No	
Percent solids		>30% (per Region 2) Percent solids are not stipulated in the DKQP	Yes	No	
Dilutions		summarize dilution and verify that RLs were adjusted	See comments		No dilutions
Quantitation Limits		Results reported between the MDL and RL qualified "J". Required units are mg/kg for solids and ug/L for waters. The lab is not permitted to report the MDL as an RL (see section 4.3 of DKQP technical guidance)	No	No	Soils reported in ug/Kg

Notes:

#Data of Known Quality Protocols Technical Guidance, version 1.0 (April 2014)

*QC forms must be provided if the required deliverable is indicated as X and non-conformances are narrated. In cases where the required deliverable field is blank, non-conformances are explained in the SDG case narrative.

^Only if requested for analysis

**Potentially “difficult” analytes include: benzenthiol, benzoic Acid, 2,4-dintrophenol, 3&4 – methylphenol, 4-nitrophenol, pentachlorophenol, phenol, aniline, aramite, A,A-dimethylphenethylamine, benzidine, benzaldehyde, benzyl Alcohol, caprolactam, chlorobenzilate, 3,3'-Dimethylbenzidine, 1,4-Dioxane, 7,12-Dimethylbenz(a)anthracene, Diallate, Dibenz(a,j)acridine, Diphenylamine, Disulfoton, p-(dimethylamine)azobenzene, decane, famphur, hexachlorocyclopentadiene, hexachloroethane, hexachlorophene, hexachloropropene, kepone, 4,4'-methylenebis(2-chloroaniline), methapyrilene, methyl methanesulfonate, methyl parathion, n-nitrosodimethylamine, 4-nitroquinoline-1-oxide, 2-Picoline, parathion, pentachloroethane, pentachlorobenzene, pentachloronitrobenzene, phorate, pronamide, pyridine, p-phenylenediamine, o-tricresyl phosphate and Tetraethyl. Please note that many of the surrogates may fall outside of the 15 – 110% range 2-Fluorophenol, Phenol-d5, 2,4,6-tribromophenol and terphenyl-d14.

[1]CCCs: Acenaphthene, 1,4-Dichlorobenzene, Hexachlorobutadiene, Diphenylamine, di-n-octyl phthalate, Fluoranthene, Benzo(a)pyrene, 4-Chloro-3-methylphenol, 2,4-Dichlorophenol, 2-Nitrophenol, Phenol, Pentachlorophenol, 2,4,6-Trichlorophenol

NJDEP EPH_DKQP

Laboratory:	Accutest, Dayton, NJ	**Client/Site Name:**	Narula
Laboratory SDG/Job No:	JC3898	**Project Number:**	60322149-8.0
Data of Known Quality (LSRP DQA/DUE NJ)		**Date:**	November 10, 2015
Number of Samples/Matrix:	4 soils	**Validator:**	Paula DiMattei
Analysis (Include Method #):	NJDEP EPH		

Review Item	*Required Deliverable	DKQP Criteria[#]	Criteria Met? (Yes/No)	Qualification? (Yes/No)	Comments
Data of Known Quality Questionnaire	X	Data of Known Quality met?	Yes	No	
		Answers on form that are "NO"	--	--	#4: QA/QC performance criteria met? #5b: RLs met? #7: project specific MS/MD?
Chain of Custody		Analyses agree with COC	Yes	No	
Sample Preservation		<6°C; allow for <2°C if samples intact AQ samples pH<2	Yes	No	5.7ºC
Holding Time		AQ and SO: 14 days to extraction; 40 days from extraction to analysis	Yes	No	
Method Blanks	X	<5x value of the MDL [re-extraction required if sample results are <10x blank value (from 9.1.4 of method)]	Yes	No	
Equipment Blanks		<RLs	NA	NA	None submitted
Initial Calibration		5 pt curve; must contain all targets and lowest standard < RL; CFs established for each compound, and when fractionated, also for each aliphatic and aromatic carbon range; %RSD for all individual CFs < 25% and	Yes	No	

Review Item	*Required Deliverable	DKQP Criteria[#]	Criteria Met? (Yes/No)	Qualification? (Yes/No)	Comments
		when fractionated, also for each aliphatic and aromatic carbon range.			
Continuing Calibration Verification		Before sample analysis and every 20 samples or 24 hours; %D < 25% for total range, < 30% any single compound; for samples undergoing fractionation: %D < 25% for each carbon range, < 30% any single compound in a range	Yes	No	
Matrix Spike (sample not fractionated)	X^	Must contain all aliphatic and aromatic compounds defined in method section 6.8.61; 40-140% for all compds (only up to and including C28 for #2 fuel/diesel)	NA	NA	Batch QC
Matrix Spike (fractionated)			NA	NA	Batch QC
Laboratory Duplicate	X^	AQ & SO RPD < 50%	Yes	No	135-SI-DD31A-0.5-1.0
Field Duplicate		Aqueous RPD ≤30%; Solids RPD ≤50% with results >2xRL; Professional judgment for results <2xRL	NA	NA	None submitted in this data set.
Surrogate Standards	X	OTP and COD: 40-140% For samples undergoing fractionation: COD should not be observed in the aromatic fraction and/or OTP should not be observed in the aliphatic fraction	Yes	No	
Fractionation Surrogates	X	2-bromonaphthalene and 2-fluorobiphenyl: 40-140%	Yes	No	
LCS/LCSD (#2 fuel/diesel)	X	Must contain #2 fuel/diesel, 40-140% and RPD <25	NA	NA	
LCS/LCSD (non-#2 fuel/diesel)	X	Must contain all aliphatic and aromatic compounds defined in method section 6.8.61; 40-140% for all compounds except n-nonane @ >25%; RPDs for the aliphatic and aromatic	Yes	No	

Review Item	*Required Deliverable	DKQP Criteria#	Criteria Met? (Yes/No)	Qualification? (Yes/No)	Comments
		carbon range concentrations (the sum of the individual compounds' concentration within a carbon range) must be < 25%			
LCS/LCSD (Fractionated samples)	X	Naphthalene & 2-methylnaphthalene: concentration of each in the aliphatic fraction <5% of total concentration	Yes	No	
Percent solids		>30% (per Region 2 SVOCs) Percent solids are not stipulated in the DKQP	Yes	No	
Dilutions		summarize dilution and verify that RLs were adjusted	See comments		No dilutions
Quantitation Limits		Results reported between the MDL and RL qualified "J". Required units are mg/kg for solids and ug/L for waters. The lab is not permitted to report the MDL as an RL (see section 4.3 of DKQP technical guidance)	Yes	No	

Notes:

#Data of Known Quality Protocols Technical Guidance, version 1.0 (April 2014)

*QC forms must be provided if the required deliverable is indicated as X and non-conformances are narrated. In cases where the required deliverable field is blank, non-conformances are explained in the SDG case narrative.

Only if requested for analysis

Metals SW6010C_DKQP

Laboratory: Accutest, Dayton, NJ
Laboratory SDG/Job No: JC3898
Data of Known Quality (LSRP DQA/DUE NJ)
Number of Samples/Matrix: 4 soils
Analysis (Include Method #): SW-846 6010C

Client/Site Name: Narula
Project Number: 60322149-8.0
Date: November 10, 2015
Validator: Paula DiMattei

Review Item	*Required Deliverable	DKQP Criteria#	Criteria Met? (Yes/No)	Qualification? (Yes/No)	Comments
Data of Known Quality Questionnaire		Data of Known Quality met?	Yes	No	
		Answers on form that are "NO"	--	--	#4: QA/QC performance criteria met? #5b: RLs met? #7: project specific MS/MD?
Chain of Custody		Analyses agree with COC	Yes	No	
Sample Preservation		AQ: total metals: HNO3 pH < 2; (dissolved metals: filter on site or at lab then HNO3 pH < 2 but cannot be used for regulatory compliance). Soil/Sediment: collect unpreserved per SW-846 Chapter 3 Table 3-2	Yes	No	5.7ºC
Holding Time		AQ and solid: Metals 180 days If soil/sediment samples are frozen, HT arrested and HT begins when thawed. Samples can be maintained frozen for 1 year from collection.	Yes	No	--
Method Blanks	X	Must be digested with samples using same preparation method and amount of acids; MB <RL	No	No	See Below

Review Item	*Required Deliverable	DKQP Criteria[#]	Criteria Met? (Yes/No)	Qualification? (Yes/No)	Comments
ICB/CCBs		Must be matrix matched (and same conc. Of acid found in standards and samples) ICB and CCB <RLs	No	No	See below
Equipment Blanks		AQ EB: <RL; Soil/sediment EB <RL on solid equivalent basis	NA	NA	None submitted
Linear Dynamic Range (LDR)		At a minimum the LDR should be checked every 6 months. A minimum of 3 different concentration standards across the ICP range; one should be near the upper limit of the range.	No issues narrated	No	
Initial Calibration		Minimum of a calibration blank plus a standard per manufacturing recommended procedures; RL standard may be included in multipoint calibration curve; .r>0.998	Yes	No	
Initial Calibration Verification		Separate source from calibration standards; must contain all target analytes; 90-110%	Yes	No	
Continuing Calibration Verification		Bracketing every 10 samples. Same source as ICAL, conc. Near mid-point of curve. Must contain all analytes: 90-110%	Yes	No	
Low Level Initial Calibration Verification		Must be run at beginning of run before samples and at end of run. Same source as calibration standards; must contain all target analytes at RL. 70-130%	Yes	No	
ICSA/ICSAB		ICSA & ICSAB: 80-120% ICSA: non-spiked analytes < 2x RL	Yes	No	
MS/MSD	X^	75-125; prof. judg. If sample conc. >4x spike level; Results > 5x RL: RPD <20 for waters and <35 for solids; Results <5x RL: absolute difference between results < RL	NA	NA	Batch QC

Review Item	*Required Deliverable	DKQP Criteria[#]	Criteria Met? (Yes/No)	Qualification? (Yes/No)	Comments
Post digestion spike	X^	Should be performed if MS/MSD recoveries were unacceptable; 80-120%	NA	NA	
Laboratory Duplicate	X^	Results > 5x RL: RPD <20% for aqueous results and <35% for solid results; Results < 5xRL:absolute difference <RL	NA	NA	
LCS	X	Must contain all target analytes and be matrix-matched; 80-120%R for aqueous and vendor control limits for solids (95% confidence limits)	Yes	No	
Serial Dilution Results	X^	Perform 5x dilution on same sample used for MS; %D < 10 when sample results are >10x RL	NA	NA	Batch QC
Field Duplicates		Aqueous results > 5xRL RPD ≤30%. Results <5x RL: prof. judg.; Soil/sediments: Results > 5xRL, RPD ≤50%; Results <5xRL: prof. judg.	NA	NA	None submitted in this data set
% solids		>50% (per Region 2) [note: metals percent solids guidance differs from organic % solids criterion of 30%] Percent solids are not stipulated in the DKQP	Yes	No	
Dilutions		summarize dilution and verify that RLs were adjusted	See comments		135-SI-DD31A-0.5-1.0: 3x for Sb, Cr, Cu, Fe, Pb, Mn, Se, Ag, Tl and Zn 135-SI-DD31A-6.2-6.7: 3x for Mn, Tl and 5x for Zn
Quantitation Limits		Results reported between the MDL and RL qualified "J". Required units are mg/kg for solids and ug/L or mg/L for waters. The lab is not permitted to report the MDL as an RL (see section 4.3 of DKQP technical guidance)	Yes	No	

Notes:

#Data of Known Quality Protocols Technical Guidance, version 1.0 (April 2014)

*QC forms must be provided if the required deliverable is indicated as X and non-conformances are narrated. In cases where the required deliverable field is blank, non-conformances are explained in the SDG case narrative.

X^ Only if requested for analysis

Analyte	Concentration	Source	Associated samples	Actions
Al	1.41 J mg/kg	CCB	135-SI-DD31A-0.5-1.0 135-SI-DD31A-10.0-10.5 135-SI-DD31A-2.6-3.1 135-SI-DD31A-6.2-6.7	PJ to take no actions since sample results were > the blank concentration.
Be	0.05 J mg/kg	CCB		
Cd	0.05 J mg/kg	CCB		
Ba	0.12 J mg/kg	PB	135-SI-DD31A-0.5-1.0 135-SI-DD31A-10.0-10.5 135-SI-DD31A-2.6-3.1 135-SI-DD31A-6.2-6.7	PJ to take no actions since sample results were >10x the blank concentration
Ca	24.8 J mg/kg			
Cu	0.26 J mg/kg			
Fe	3.4 J mg/kg			
Mg	9.1 J mg/kg			
Mn	0.089 J mg/kg			
Na	11.5 J mg/kg			

Region 2 Guidance

Blank Type	Blank result	Sample Result	Action
ICB/CCB	≥ MDL but ≤ RL	Nondetect	No action
		≥ MDL but ≤ RL	Report RL U
		> RL	Use professional judgment
	> RL	≥MDL but ≤RL	Report RL U
		>RL but <blank result	Report at level of blank result with a U
		>Blank result	Use professional judgment
	≤ (-MDL) but ≥ (-RL)	≥MDL, or ND	Use professional judgment
	< (-RL)	<10x the RL	Qualify results ≥ RL as (J-) and nondetects (UJ)
Prep Blank	≥MDL but ≤ RL	Nondetect	No action
		≥MDL but ≤ RL	Report RL U
		>RL	Use professional judgment
	>RL	≥MDL but ≤RL	Report RL U
		>RL but <10x blank result	Qualify results (J+)
		≥10x the blank result	No action
	<(-RL)	<10x RL	Qualify results ≥ RL as (J-) and nondetects as (UJ)
Field, Trip, Rinsate	>RL	≥MDL but ≤RL	Report RL U
		>RL but <blank result	Report at level of blank result with a U
		>blank result but <10x blank result	Use professional judgment to qualify results as estimated (J)

Mercury SW7471B_7470A_DKQP

Laboratory: Accutest, Dayton, NJ
Laboratory SDG/Job No: JC3898
Data of Known Quality (LSRP DQA/DUE NJ)
Number of Samples/Matrix: 4 Soils
Analysis (Include Method #): SW-846 7471B/7470A

Client/Site Name: Narula
Project Number: 60322149-8.0
Date: November 10, 2015
Validator: Paula DiMattei

Review Item	*Required Deliverable	DKQP Criteria#	Criteria Met? (Yes/No)	Qualification? (Yes/No)	Comments
Data of Known Quality Questionnaire		Data of Known Quality met?	Yes	No	
		Answers on form that are "NO"	--	--	#4: QA/QC performance criteria met? #5b: RLs met? #7: project specific MS/MD?
Chain of Custody		Analyses agree with COC	Yes	No	
Sample Preservation		Soil/sediment ≤6ºC; allow for <2ºC if samples intact Aq: total metals: HNO_3 pH < 2; (dissolved metals: filter on site or at lab then HNO_3 pH < 2 but cannot be used for regulatory compliance).	Yes	No	5.7ºC
Holding Time		AQ and Solid: 28 days from collection to analysis. If soil/sediment samples are frozen, HT is arrested and HT begins when thawed. Samples can be maintained frozen for 1 year from collection.	Yes	No	
Method Blanks	X	Must be digested with samples using same preparation method and amount of acids: <RL	No	Yes	See below
ICB/CCBs		Must be matrix-matched (and same conc. Of	Yes	No	

Review Item	*Required Deliverable	DKQP Criteria#	Criteria Met? (Yes/No)	Qualification? (Yes/No)	Comments
		acid found in standards and samples); <RL			
Equipment Blanks		AQ EB: <RL; Soil/sediment EB <RL on solid equivalent basis	NA	NA	None submitted
Initial Calibration		Minimum of 5 calibration levels plus blank; low level standard at level of RL; r≥0.995	No issues narrated	No	
Initial Calibration Verification		Separate-source from calibration; 90-110%	Yes	No	
Low Level Calibration verification		70-130%	Yes	No	
Continuing Calibration Verification		Same source as ICAL; conc. Near mid-point of calibration curve; 80-120%	Yes	No	
MS/MSD	X^	75-125%, Prof. judg. If sample concentration > 4x spike level; AQ Results ≥ 5xRL, RPD ≤20 and Results <5x RL: absolute difference between results ≤ RL; Solid results ≥ 5x RL RPD ≤ 35; Results < 5x RL: absolute difference between results ≤ 2xRL	NA	NA	Batch QC
Laboratory Duplicate	X^	Aqueous: RPD ≤ 20% and Soil/sediment RPD ≤ 35	NA	NA	
LCS	X	Must be matrix-matched; 80-120%R for aqueous and vendor control limits for solids (95% confidence)	Yes	No	
Field Duplicates		Aqueous results ≥ 5xRL RPD ≤30%. Results <5x RL: prof. judg.; Soil/sediments: Results ≥ 5xRL, RPD ≤50%; Results <5xRL: prof. judg.	NA	NA	None submitted with this data set
% solids		>50% (per Region 2) [note: Hg percent solids guidance differs from organic % solids criterion of 30%] Percent solids are not stipulated in the DKQP	Yes	No	

Review Item	*Required Deliverable	DKQP Criteria#	Criteria Met? (Yes/No)	Qualification? (Yes/No)	Comments
Dilutions		summarize dilution and verify that RLs were adjusted	See comments		135-SI-DD31A-0.5-1.0: 5x 135-SI-DD31A-2.6-3.1: 5x
Quantitation Limits		Results reported between the MDL and RL qualified "J". Required units are mg/kg for solids and ug/L or mg/L for waters. The lab is not permitted to report the MDL as an RL (see section 4.3 of DKQP technical guidance)	Yes	No	

Notes:

#Data of Known Quality Protocols Technical Guidance, version 1.0 (April 2014)

*QC forms must be provided if the required deliverable is indicated as X and non-conformances are narrated. In cases where the required deliverable field is blank, non-conformances are explained in the SDG case narrative.

Only if requested for analysis

Analyte	Concentration	Source	Associated samples	Actions
Hg	-0.010 J mg/kg	PB	135-SI-DD31A-0.5-1.0 135-SI-DD31A-10.0-10.5 135-SI-DD31A-2.6-3.1 135-SI-DD31A-6.2-6.7	Estimate J- in all except 135-SI-DD31A-2.6-3.1 since results were <10x RL.

Region 2 Guidance

Blank Type	Blank result	Sample Result	Action
ICB/CCB	≥ MDL but ≤ RL	Nondetect	No action
		≥ MDL but ≤ RL	Report RL U
		> RL	Use professional judgment
	> RL	≥MDL but ≤RL	Report RL U
		>RL but <blank result	Report at level of blank result with a U
		>Blank result	Use professional judgment
	≤ (-MDL) but ≥ (-RL)	≥MDL, or ND	Use professional judgment
	< (-RL)	<10x the RL	Qualify results ≥ RL as (J-) and nondetects (UJ)
Prep Blank	≥MDL but ≤ RL	Nondetect	No action
		≥MDL but ≤ RL	Report RL U
		>RL	Use professional judgment
	>RL	≥MDL but ≤RL	Report RL U
		>RL but <10x blank result	Qualify results (J+)
		≥10x the blank result	No action
	<(-RL)	<10x RL	Qualify results ≥ RL as (J-) and nondetects as (UJ)
Field, Trip, Rinsate	>RL	≥MDL but ≤RL	Report RL U
		>RL but <blank result	Report at level of blank result with a U
		>blank result but <10x blank result	Use professional judgment to qualify results as estimated (J)

Attachment B

Reporting Limit Exceedances

Exceedance Table
Reporting Limit > Regulatory Limit

Field ID	Lab ID	State Reg. Used	Analyte	Sample RL	Reg. Limit	Dilution	Units
135-SI-DD31A-0.5-1.0	JC3898-1	NJ Default Impact to Groundwater Soil Screening	Thallium	3.3	3	3	mg/kg
135-SI-DD31A-10.0-10.5	JC3898-4	See regs used below	No exceedances found for this sample				
135-SI-DD31A-2.6-3.1	JC3898-2	See regs used below	No exceedances found for this sample				
135-SI-DD31A-6.2-6.7	JC3898-3	NJ Default Impact to Groundwater Soil Screening	Thallium	3.6	3	3	mg/kg

The regulatory limits used for comparison are:
NJ Default Impact to Groundwater Soil Screening
NJ Groundwater Criteria
NJ Interim Groundwater Criteria
NJ Non-Residential Direct Contact Soil
NJ Residential Direct Contact Soil
NJ SPLP Impact to Groundwater
NJ Vapor Intrusion GW Screening

AECOM
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Chelmsford, MA 01824

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Data Validation Report

Project:	PPG Site 135/South Supplemental PDI Soil Sampling	
Laboratory:	Accutest, Dayton, NJ	
Laboratory Job No.:	JC14857A	
Analysis/Method:	Volatile Organic Compounds (VOCs) by GCMS/SW846-8260 Semivolatile Organic Compounds (SVOCs) by GCMS/SW846-8270 Polychlorinated Biphenyls/USEPA Methods SW-846 3546/8082A TAL Metals SW846 3050B/6010C/7470/7471	
Validation Level:	Limited	
Site Location/Address:	PPG Site 135/South Supplemental PDI Sampling /Jersey City, NJ	
AECOM Project No:	60314351.GA.DE.PDI.P3	
Prepared by:	Sharon McKechnie /AECOM	Completed on: 03/22/2016
Reviewed by:	Dion Lewis/AECOM Dawn Brule/AECOM	File Name: JC14857A_2016/03/22_DV Report-F

Introduction

The data were reviewed in accordance with the FSP-QAPP and the following NJDEP validation Standard Operating Procedures (SOP):

- NJDEP Office of Data Quality SOP 5.A.16, Rev 1 (May 2002), Quality Assurance Data Validation of Analytical Deliverables for Inorganics (based on USEPA SW-846 Methods);
- Validating Volatile Organic Compounds By Gas Chromatography/Mass Spectrometry SW-846 Method 8260B, SOP HW-24, Revision 2;
- Validating Semivolatile Organic Compounds By Gas Chromatography/Mass Spectrometry SW-846 Method 8270, SOP HW-22, Revision 4;
- Data Validation SOP of Organic Analysis of PCBs by Gas Chromatography SW846 Method 8082A, HW-45 Revision 1.

The results of quality control data analyzed with site samples were used to assess the overall reliability of the data. The following qualifiers were used to identify data quality issues:

U: Indicates the analyte was not detected in the sample above the sample reporting limit.

J: Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

UJ: Indicates the analyte was not detected above the reporting limit and the reporting limit was approximate.

UB: The analyte concentration is less than or equal to three (3) times the concentration in the associated method/prep blank. The presence of the analyte in the sample is negated (UB) due to laboratory contamination.

JB: The analyte concentration is greater than three (3) times, but less than or equal to ten (10) times the concentration in the associated method/prep blank. The presence of that analyte in the sample is considered "real". The concentration is quantitatively qualified (JB) due to method blank contamination.

R: The sample result was rejected due to serious deficiencies; the presence or absence of the analyte could not be confirmed.

Sample Information

The samples listed below were collected by AECOM on February 25, 2016 as part of the PPG Site 135/South Supplemental PDI, Soil Sampling at the Jersey City, NJ site. Only the samples and parameters listed below were validated.

Field ID	Laboratory ID	Matrix	Fraction
135-BB35AR-1.0-1.5	JC14857-10A	Soil	Mercury, Metals, SVOCs and VOCs
135-BB35AR-11.0-11.5	JC14857-11A	Soil	Mercury, Metals, SVOCs and VOCs
135-BB35AR-13.0-13.5	JC14857-12A	Soil	Mercury, Metals, SVOCs and VOCs
135-BB35AR-14.0-14.5	JC14857-13A	Soil	Mercury, Metals, SVOCs and VOCs
135-BB35AR-15.0-15.5	JC14857-14A	Soil	Mercury, Metals, SVOCs and VOCs
135-BB35AR-3.0-3.5	JC14857-15A	Soil	Mercury, Metals, SVOCs and VOCs
135-BB35AR-5.0-5.5	JC14857-16A	Soil	Mercury, Metals, SVOCs and VOCs
135-BB35AR-7.0-7.5	JC14857-17A	Soil	Mercury, Metals, SVOCs and VOCs
135-BB35AR-7.0-7.5X (Field Duplicate of sample 135-BB35AR-7.0-7.5)	JC14857-18A	Soil	Mercury, Metals, SVOCs and VOCs
135-BB35AR-9.0-9.5	JC14857-19A	Soil	Mercury, Metals, SVOCs and VOCs
135-BB36A-1.5-2.0	JC14857-20A	Soil	Mercury, Metals, SVOCs and VOCs
135-BB36A-11.5-12.0	JC14857-21A	Soil	Mercury, Metals, SVOCs and VOCs
135-BB36A-13.5-14.0	JC14857-22A	Soil	Mercury, Metals, SVOCs and VOCs
135-BB36A-14.0-14.5	JC14857-23A	Soil	Mercury, Metals, SVOCs and VOCs
135-BB36A-3.5-4.0	JC14857-24A	Soil	Mercury, Metals, SVOCs and VOCs
135-BB36A-5.5-6.0	JC14857-25A	Soil	Mercury, Metals, SVOCs and VOCs
135-BB36A-7.5-8.0	JC14857-26A	Soil	Mercury, Metals, SVOCs and VOCs
135-BB36A-9.5-10.0	JC14857-27A	Soil	Mercury, Metals, SVOCs and VOCs
135-CC28A-10.0-10.5	JC14857-28A	Soil	Mercury, Metals, SVOCs and VOCs
135-CC28A-10.0-10.5X (Field Duplicate of sample 135-CC28A-10.0-10.5)	JC14857-29A	Soil	Mercury, Metals, SVOCs and VOCs
135-CC28A-12.0-12.5	JC14857-30A	Soil	Mercury, Metals, SVOCs and VOCs
135-CC28A-14.0-14.5	JC14857-31A	Soil	Mercury, Metals, SVOCs and VOCs
135-CC28A-16.0-16.5	JC14857-32A	Soil	Mercury, Metals, SVOCs and VOCs
135-CC28A-18.0-18.5	JC14857-33A	Soil	Mercury, Metals, SVOCs and VOCs
135-CC28A-18.5-19.0	JC14857-34A	Soil	Mercury, Metals, SVOCs and VOCs

Field ID	Laboratory ID	Matrix	Fraction
135-CC28A-19.0-19.5	JC14857-35A	Soil	Mercury, Metals, SVOCs and VOCs
135-CC31A-10.0-10.5	JC14857-1A	Soil	Mercury, Metals, PCBs, SVOCs and VOCs
135-CC31A-12.0-12.5	JC14857-2A	Soil	Mercury, Metals, PCBs, SVOCs and VOCs
135-CC31A-14.0-14.5	JC14857-3A	Soil	Mercury, Metals, PCBs, SVOCs and VOCs
135-CC31A-16.0-16.5	JC14857-4A	Soil	Mercury, Metals, PCBs, SVOCs and VOCs
135-CC31A-16.5-17.0	JC14857-5A	Soil	Mercury, Metals, PCBs, SVOCs and VOCs
135-CC31A-2.0-2.5	JC14857-6A	Soil	Mercury, Metals, PCBs, SVOCs and VOCs
135-CC31A-4.0-4.5	JC14857-7A	Soil	Mercury, Metals, PCBs, SVOCs and VOCs
135-CC31A-6.0-6.5	JC14857-8A	Soil	Mercury, Metals, PCBs, SVOCs and VOCs
135-CC31A-8.0-8.5	JC14857-9A	Soil	Mercury, Metals, PCBs, SVOCs and VOCs
135-FB20160225 (Equipment Blank)	JC14857-36A	Aqueous	Mercury, Metals, SVOCs and VOCs

The samples were collected following the procedures detailed in the Work Order for Garfield Avenue Remedial Action (GARA) and the Field Sampling Plan/Quality Assurance Project Plan for Non-Residential and Residential Chromium Sites Hudson County, New Jersey (December 2011).

General Comments

The data packages were complete. Quality control (QC) issues identified during validation are discussed below. Refer to the Target Analyte Summary Hit(s) in Attachment A for a listing of all detected results, qualified results, and associated qualifications, where applicable. The nonconformances for each section discussed below are presented in Attachment B.

TAL Metals

Laboratory Blank Results

There were four method blanks (MB) associated with the soil samples in this SDG:

- MB from batch MP92200 (TAL metals) associated with soil samples JC14857-1A through 20A, inclusive
- MB from batch MP92208 (TAL metals) associated with soil samples JC14857-21A through 35A, inclusive
- MB from batch MP92204 (mercury) associated with soil samples JC14857-1A through 19A, inclusive
- MB from batch MP92228 (mercury) associated with soil samples JC14857-20A through 35A, inclusive

And two MBs associated with the aqueous sample in this SDG:

- MB from batch MP92209 (TAL metals) and MB from batch MP92231 (mercury) associated with sample JC14857-36A

MB MP92209

MB MP92209 was positive for calcium, copper, and manganese at concentrations greater than the method detection limit (MDL) but less than the reporting limit (RL).

Copper and manganese were detected in sample 135-FB20160225 (JC14857-36A) at less than three times the amount in the MB; therefore, copper and manganese were negated (UB) at the RL.

Calcium was detected in sample 135-FB20160225 (JC14857-36A) at greater than than three times but less than ten times the amount in the MB; therefore, calcium was estimated (JB).

The remaining detected results in the MBs did not result in qualifications to the data.

Refer to the Target Analyte Summary Hit(s) in Attachment A for a listing of all results qualified on the basis of MB contamination. Refer to the nonconformance tables in Appendix B for a listing of MB results and associated qualification actions.

Equipment Blank Results

Sodium was detected in the equipment blank (EB) associated with the samples in this SDG at a concentration above the MDL, but below the RL.

Sodium was detected in several samples at less than ten, but greater than three times the EB, and therefore was qualified as estimated (J).

The remaining detected results in the EB did not result in qualifications to the data.

Refer to the Target Analyte Summary Hit(s) in Attachment A for a listing of all results qualified on the basis of EB contamination. Refer to the nonconformance tables in Appendix B for a listing of EB results and associated qualification actions.

Matrix Spike Results

There were two matrix spike samples associated with the samples in this SDG:

- JC14857-9A associated with samples in batch MP92200 (JC14857-1A through JC14857-20A, inclusive)

- JC14857-30A associated with samples in batch MP92208 (JC14857-21A through JC14857-35A, inclusive)

JC14857-9A

The MS or MSD recovery for antimony, barium, calcium, lead, manganese, and zinc were below the QC criteria of 75-125%. The results for the affected analytes in the associated sample were estimated (J/UJ) on the basis of MS/MSD results.

The MS recoveries were below and the MSD recoveries exceeded the QC criteria of 75-125% for lead and zinc. The results for the affected analytes in the associated sample were estimated (J) with an indeterminate bias on the basis of MS/MSD results.

The MS/MSD recoveries for aluminum were above the QC criteria of 75-125%. The positive result for aluminum in the associated sample was estimated (J) on the basis of MS/MSD results.

The MS/MSD recoveries for copper and iron were outside the QC criteria of 75-125%. Since the spiked sample results were greater than 4X the amounts spiked in both cases, no qualifications were required.

The relative percent differences (RPDs) for barium, lead, manganese and zinc exceeded the MS/MSD QC acceptance RPD of 20%; therefore, the reported results were estimated (J).

Refer to the Target Analyte Summary Hit(s) in Attachment A for a listing of all results qualified on the basis of MS recoveries. Refer to the nonconformance tables in Appendix B for a listing of MS/MSD/RPD results and associated qualification actions.

JC14857-30A

The MS or MSD for aluminum, antimony, barium, calcium, copper, lead, manganese, and zinc were outside the QC criteria of 75-125%. The results for the affected analytes in the associated samples were estimated (J/UJ) on the basis of MS/MSD results.

The MS recovery exceeded and the MSD recovery was below the QC criteria of 75-125% for lead. The result for lead in the associated sample was estimated (J) with an indeterminate bias on the basis of MS/MSD results.

The MS/MSD recoveries for iron were outside the QC criteria of 75-125%. Since the spiked sample results were greater than 4X the amount spiked, no qualifications were required.

The relative percent differences (RPDs) for barium, calcium, lead and zinc exceeded the MS/MSD QC acceptance RPD of 20%; therefore, the reported results were estimated (J).

Refer to the Target Analyte Summary Hit(s) in Attachment A for a listing of all results qualified on the basis of MS recoveries. Refer to the nonconformance tables in Appendix B for a listing of MS/MSD/RPD results and associated qualification actions.

Field Duplicate Results

There were two field duplicate (FD) pairs associated with the soil samples in this SDG:

- 135-BB35AR-7.0-7.5 (JC14857-17A)/ 135-BB35AR-7.0-7.5X (JC14857-18A)
- 135-CC28A-10.0-10.5 (JC14857-28A)/ 135-CC28A-10.0-10.5 X (JC14857-29A)

135-BB35AR-7.0-7.5 (JC14857-17A)/ 135-BB35AR-7.0-7.5X (JC14857-18A)

The RPDs for several analytes were outside the criteria of less than 35%.

The results for aluminum, lead, zinc, and calcium in samples 135-BB35AR-7.0-7.5 (JC14857-17A) and 135-BB35AR-7.0-7.5X (JC14857-18A) were estimated (J) on the basis of field duplicate precision.

The RPD for antimony was non-calculable (NC) due to a nondetected result in the duplicate sample. However, the detected result in the parent sample was less than 5X the RL, and the difference between the parent and duplicate was less than the RL; therefore, no qualifications were applied to antimony on the basis of field duplicate precision. The RPD

Refer to the Target Analyte Summary Hit(s) in Attachment A for a listing of all results qualified on the basis of field duplicate precision. Refer to the nonconformance tables in Appendix B for a listing of FD results and associated qualification actions.

135-CC28A-10.0-10.5 (JC14857-28A)/ 135-CC28A-10.0-10.5 X (JC14857-29A)

The relative percent differences (RPDs) for several analytes were outside the criteria of less than 35%.

The results for manganese and copper in samples 135-CC28A-10.0-10.5 (JC14857-28A) and 135-CC28A-10.0-10.5 X (JC14857-29A) were estimated (J) on the basis of field duplicate precision.

The RPD for antimony exceeded the 35% QC limit. However, the sample and duplicate results were less than 5X the RL and the absolute difference was less than the RL. Therefore, no qualifications were applied to antimony on the basis of field duplicate precision.

Refer to the Target Analyte Summary Hit(s) in Attachment A for a listing of all results qualified on the basis of field duplicate precision. Refer to the nonconformance tables in Appendix B for a listing of FD results and associated qualification actions.

Percent Solids

The moisture content for several samples exceeded the acceptable limit of 50%, thus the data for the affected samples were qualified (J) as estimated.

Refer to the Attachment A for a list of sample results qualified on the basis of percent solids. Refer to the tables in Attachment B for a list of percent solids for each sample.

Sample Results

All chromium results were compared to the corresponding hexavalent chromium (reported in SDGs JC14857, JC14857R, and JC14857T) to verify that all chromium concentrations were greater than the hexavalent chromium concentrations. No qualifications were applied on this basis. Refer to the tables in Attachment B for a list of the above comparison for each sample.

Reported results (flagged J by the laboratory) that were less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL) are approximate values and have been qualified as estimated (J).

VOCs

Calibration Results

The result for acetone in sample JC14857-32A exceeded the upper calibration range. The result reported for acetone was footnoted by the laboratory as an estimated value reported from the low level analysis due to sample non-homogeneity. Therefore, the result for acetone in sample 135-CC28A-16.0-16.5 (JC14857-32A) was estimated (J).

Laboratory Duplicate Results

Sample (JC14857-14A) was the laboratory duplicate sample associated with the samples in this SDG. The RPDs for acetone and carbon disulfide exceeded the laboratory QC acceptance criteria in the laboratory duplicate analysis and were estimated (J/UJ) in the duplicate sample.

The RPD for 2-butanone was non-calculable due to a nondetect result in the parent sample. Precision was deemed acceptable since the detected concentration in the duplicate sample was less than 4 times the reporting limit (RL).

Refer to the Attachment A for a list of sample results qualified on the basis of laboratory duplicate RPDs. Refer to the tables in Attachment B for a list of laboratory duplicate RPDs.

Matrix Spike Results

Samples 135-BB36A-13.5-14.0 (JC14857-22A) and 135-CC28A-12.0-12.5 (JC14857-30A) were the matrix spike/matrix spike duplicate (MS/MSD) samples associated with the samples in this SDG.

135-BB36A-13.5-14.0 (JC14857-22A)

For MS sample 135-BB36A-13.5-14.0 (JC14857-22A), almost half of the target compounds recovered less than the lower laboratory limit. Since all but two reported results in the spiked sample were nondetected, professional judgment was used to qualify all results with recoveries (%Rs) ≥ 20% as estimated (J/UJ) in the spiked sample, and may have a low bias.

In addition, several nondetected compounds recovering < 20% were rejected (R) in the spiked sample on the basis of MS/MSD recovery.

Acetone recovered over the upper lab limit and therefore the positive result was qualified as estimated (J) in the spiked sample, and may have a high bias.

The MS %Rs for 1, 2, 3-trichlorobenzene and 1, 2, 4-trichlorobenzene were each 7%; however, since the lower laboratory QC limit was 14%, the nondetected results in the spiked sample were estimated (UJ).

135-CC28A-12.0-12.5 (JC14857-30A)

For MS/MSD sample 135-CC28A-12.0-12.5 (JC14857-30A), over half of the target compounds recovered less than the lower laboratory limit. Since all but three reported results in the spiked sample were nondetected, professional judgment was used to qualify all results with %Rs ≥ 20% as estimated (J/UJ) in the spiked sample, and may have a low bias.

In addition, several nondetected compounds recovering < 20% were rejected (R) in the spiked sample on the basis of MS/MSD recovery.

The MS/MSD %Rs for 1, 2, 3-trichlorobenzene and 1, 2, 4-trichlorobenzene were all below 20% and ranged from 3% to 7%; however, since the lower laboratory QC limit was 14%, the nondetected results in the spiked sample were estimated (UJ).

Any compound estimated for MS/MSD %R that also exceeded the relative percent difference (RPD) limit, has an indeterminate bias.

For both samples spiked above, the associated LCS met QC criteria.

Refer to the Attachment A for a list of sample results rejected or qualified on the basis of MS and/or MSD %Rs. Refer to the tables in Attachment B for a list of MS and MSD %Rs.

Field Duplicate Results

There were two field duplicate (FD) pairs associated with the VOC soil samples in this SDG:

- 135-BB35AR-7.0-7.5 (JC14857-17A)/ 135-BB35AR-7.0-7.5X (JC14857-18A)
- 135-CC28A-10.0-10.5 (JC14857-28A)/ 135-CC28A-10.0-10.5 X (JC14857-29A)

<u>135-BB35AR-7.0-7.5 (JC14857-17A)/ 135-BB35AR-7.0-7.5X (JC14857-18A)</u>

The RPD for acetone was non-calculable (NC) due to a nondetected result in the duplicate sample. However, the detected result in the parent sample was less than 5X the RL and the difference between the MDL and the detected value was less than the RL; therefore, no qualifications were applied to acetone on the basis of field duplicate precision.

Refer to the Target Analyte Summary Hit(s) in Attachment A for a listing of all results qualified on the basis of field duplicate precision. Refer to the nonconformance tables in Appendix B for a listing of FD results and associated qualification actions.

<u>135-CC28A-10.0-10.5 (JC14857-28A)/ 135-CC28A-10.0-10.5 X (JC14857-29A)</u>

The RPD for methylcyclohexane was outside the criteria of less than 35%; therefore, the results were estimated (J) in the sample and duplicate.

The RPDs for cyclohexane and acetone exceeded the 35% QC limit. The sample and duplicate results were less than 5X the RL but the absolute difference was greater than the RL. Therefore, cyclohexane and acetone were estimated (J) in the sample and duplicate on the basis of field duplicate precision.

The RPD for carbon disulfide exceeded the 35% QC limit. However, the sample and duplicate results were less than 5X the RL and the absolute difference was less than the RL. Therefore, no qualifications were applied to carbon disulfide on the basis of field duplicate precision.

Refer to the Target Analyte Summary Hit(s) in Attachment A for a listing of all results qualified on the basis of field duplicate precision. Refer to the nonconformance tables in Appendix B for a listing of FD results and associated qualification actions.

Percent Solids

The moisture content for several samples exceeded the acceptable limit of 50%, thus the data for the affected samples were qualified (J) as estimated.

Refer to the Attachment A for a list of sample results qualified on the basis of percent solids. Refer to the tables in Attachment B for a list of percent solids for each sample.

Sample Results

Reported results (flagged J by the laboratory) that were less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL) are approximate values and have been qualified as estimated (J).

SVOCs

Surrogate Results

All surrogates were within laboratory limits for the initial undiluted analysis of sample 135-BB36A-1.5-2.0 (JC14857-20A); however, all surrogates were diluted out for the reanalysis. Since the initial run met criteria, professional judgment was used to estimate (J) only those compounds reported from the diluted run of sample 135-BB36A-1.5-2.0 (JC14857-20A) since there was no available surrogate %R data.

All surrogate %Rs met QC limits except for one base neutral (2-Flourobiphenyl) in the initial run of sample 135-BB36A-14.0-14.5 (JC14857-23A). All surrogates except for one base neutral (Nitrobenzene-d5) were outside laboratory limits for the surrogate confirmation run of sample JC14857-23A. Due to the inconsistent %Rs between the two runs, all results in sample JC14857-23A were estimated (J/UJ) with an indeterminate bias.

Refer to the Attachment A for a list of sample results qualified on the basis of surrogate %R. Refer to the tables in Attachment B for a list of surrogate %Rs.

Matrix Spike Results

Sample 135-CC28A-12.0-12.5 (JC14857-30A) was the MS/MSD sample associated with the samples in this SDG. The MS %R for 2-nitrophenol was slightly below the lower laboratory QC limit, and the MSD %R met laboratory criteria. The MS/MSD RPD exceeded the laboratory QC criteria; therefore the affected compound was estimated (UJ) in the spiked sample and has an indeterminate bias.

The MS and MSD %Rs for hexachloroethane were 8% and 14%, respectively. Since the MS %R was < 10% and the spiked sample result for hexachloroethane was nondetected, professional judgment was used to reject (R) the nondetected result for the affected compound in the spiked sample.

The MS and MSD %Rs for 2, 4-dinitrophenol, 4, 6-dinitro-o-cresol, and hexachlorocyclopentadiene were 0%. Therefore, professional judgment was used to reject (R) the nondetected results for the affected compounds in the spiked sample.

Refer to the Attachment A for a list of sample results qualified on the basis of MS and/or MSD %Rs. Refer to the tables in Attachment B for a list of MS and MSD %Rs.

Field Duplicate Results

There were two field duplicate (FD) pairs associated with the VOC soil samples in this SDG:

- 135-BB35AR-7.0-7.5 (JC14857-17A)/ 135-BB35AR-7.0-7.5X (JC14857-18A)
- 135-CC28A-10.0-10.5 (JC14857-28A)/ 135-CC28A-10.0-10.5 X (JC14857-29A)

135-BB35AR-7.0-7.5 (JC14857-17A)/ 135-BB35AR-7.0-7.5X (JC14857-18A)

The RPDs for pyrene, benzo (b) fluoranthene, fluoranthene, benzo (a) anthracene, and phenanthrene exceeded the 35% QC limit. However, the sample and duplicate results were less than 5X the RL and the absolute difference was less than the RL. Therefore, no qualifications were applied on the basis of field duplicate precision.

The RPD for benzo (k) fluoranthene was non-calculable (NC) due to a nondetected result in the duplicate sample. However, the detected result in the parent sample was less than 5X the RL and the difference between the MDL and the detected value was less than the RL; therefore, no qualifications were applied to acetone on the basis of field duplicate precision.

Refer to the Target Analyte Summary Hit(s) in Attachment A for a listing of all results qualified on the basis of field duplicate precision. Refer to the nonconformance tables in Appendix B for a listing of FD results and associated qualification actions.

135-CC28A-10.0-10.5 (JC14857-28A)/ 135-CC28A-10.0-10.5 X (JC14857-29A)

The RPDs for 3+4-methylphenol, phenanthrene, and pyrene were outside the criteria of less than 35%; therefore, the results were estimated (J) in the sample and duplicate.

The RPDs for benzo (a) anthracene, benzo (a) pyrene, chrysene, and fluoranthene exceeded the 35% QC limit. The sample and duplicate results were less than 5X the RL but the absolute difference was greater than the RL. Therefore, benzo (a) anthracene, benzo (a) pyrene, chrysene, and fluoranthene were estimated (J) in the sample and duplicate on the basis of field duplicate precision.

The RPDs for several compounds exceeded the 35% QC limit. However, the sample and duplicate results were less than 5X the RL and the absolute difference was less than the RL. Therefore, no qualifications were applied to these compounds on the basis of field duplicate precision.

The RPDs for several compounds were non-calculable (NC) due to a nondetected result in the parent or duplicate sample. However, the detected result was less than 5X the RL; therefore, no qualifications were applied to the affected compounds on the basis of field duplicate precision.

Refer to the Target Analyte Summary Hit(s) in Attachment A for a listing of all results qualified on the basis of field duplicate precision. Refer to the nonconformance tables in Appendix B for a listing of FD results and associated qualification actions.

Percent Solids

The moisture content for several samples exceeded the acceptable limit of 50%, thus the data for the affected samples were qualified (J) as estimated.

Refer to the Attachment A for a list of sample results qualified on the basis of percent solids. Refer to the tables in Attachment B for a list of percent solids for each sample.

Sample Results

Reported results (flagged J by the laboratory) that were less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL) are approximate values and have been qualified as estimated (J).

PCBs

Percent Solids

The moisture content for several samples exceeded the acceptable limit of 50%, thus the data for the affected samples were qualified (UJ) as estimated.

Refer to the Attachment A for a list of sample results qualified on the basis of percent solids. Refer to the tables in Attachment B for a list of percent solids for each sample.

Data Quality and Usability

In general, the data appear to be valid and may be used for decision-making purposes with the exception of selected VOC and SVOC data points, which were rejected due to very low MS recoveries.

The following additional issues were noted for this sample set:

- Results were reported between the MDL and RL, and are approximate values
- Copper and manganese were detected in sample 135-FB20160225 (JC14857-36A) at less than three times the amount in the MB and were negated (UB) at the RL.
- Calcium was detected in sample 135-FB20160225 (JC14857-36A) at greater than than three times but less than ten times the amount in the MB and was estimated (JB).
- Sodium was detected in several soil samples at less than ten, but greater than three times the EB, and therefore was qualified as estimated (J).
- Antimony, aluminum, barium, calcium, copper, lead, manganese, and zinc in several soil samples were estimated on the basis of MS/MSD or RPD results.
- The results for aluminum, lead, zinc, and calcium in samples 135-BB35AR-7.0-7.5 (JC14857-17A) and 135-BB35AR-7.0-7.5X (JC14857-18A) were estimated (J) on the basis of field duplicate precision.
- The results for manganese and copper in samples 135-CC28A-10.0-10.5 (JC14857-28A) and 135-CC28A-10.0-10.5 X (JC14857-29A) were estimated (J) on the basis of field duplicate precision.
- The results for acetone and carbon disulfide in VOC Sample 135-BB35AR-15.0-15.5 (JC14857-14A) were estimated for laboratory duplicate nonconformance.
- Several VOC results in samples 135-BB36A-13.5-14.0 (JC14857-22A) and 135-CC28A-12.0-12.5 (JC14857-30A) were estimated due to low MS recovery.
- Acetone in sample 135-CC28A-16.0-16.5 (JC14857-32A) was estimated due to exceeding the upper calibration range and may have a high bias.
- Acetone in sample 135-BB36A-13.5-14.0 (JC14857-22A) was estimated due to high MS recovery and may have a high bias.

- The nondetected results for several VOC compounds in sample 135-BB36A-13.5-14.0 (JC14857-22A) were **rejected** on the basis of MS recovery.

- The nondetected results for several VOC compounds in sample 135-CC28A-12.0-12.5 (JC14857-30A) were **rejected** on the basis of MS/MSD recovery.

- Methylcyclohexane, cyclohexane, and acetone were estimated in samples 135-CC28A-10.0-10.5 (JC14857-28A) and 135-CC28A-10.0-10.5 X (JC14857-29A) due to field duplicate precision.

- Several SVOC compounds reported from the diluted run of sample 135-BB36A-1.5-2.0 (JC14857-20A) were estimated due to no available surrogate %R data.

- All SVOC results in sample 135-BB36A-14.0-14.5 (JC14857-23A) were estimated with an indeterminate bias due to inconsistent surrogate recoveries between the initial and confirmation runs.

- The result for 2-nitrophenol in sample 135-CC28A-12.0-12.5 (JC14857-30A) was estimated for high MS/MSD/RPD and has an indeterminate bias.

- The nondetected result for hexachloroethane, 2, 4-dinitrophenol, 4, 6-dinitro-o-cresol, and hexachlorocyclopentadiene in sample 135-CC28A-12.0-12.5 (JC14857-30A) were **rejected** for MS/MSD recovery.

- The results for 3+4-methylphenol, phenanthrene, pyrene, benzo (a) anthracene, benzo (a) pyrene, chrysene, and fluoranthene in samples 135-CC28A-10.0-10.5 (JC14857-28A) and 135-CC28A-10.0-10.5 X (JC14857-29A) were estimated for field duplicate precision.

- The reporting limits for several nondetect results were above the NJDEP DIGWSSL Criteria and/or NJDEP Specific Soil Quality Criteria; therefore, the nondetect results may not meet project objectives. See Attachment B for a list of samples that did not meet criteria.

ATTACHMENTS

Attachment A: Target Analyte Summary Hitlist(s)

Attachment B: Data Validation Report Form

Attachment A

Target Analyte Summary Hitlist(s)

VOC and PCB Soil Target Analyte Summary Hit List

Site Name PPG Site 135/South Supplemental PDI Soil Sampling
Sampling Dates February 25, 2016
Lab Name/ID Accutest, Dayton, NJ
SDG No JC14857A
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID 135-FB20160225

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-CC31A-14.0-14.5	JC14857-3A	PCB 1016	U	U	U	69	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	PCB 1221	U	U	U	69	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	PCB 1232	U	U	U	69	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	PCB 1242	U	U	U	69	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	PCB 1248	U	U	U	69	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	PCB 1254	U	U	U	69	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	PCB 1260	U	U	U	69	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	PCB 1262	U	U	U	69	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	PCB 1268	U	U	U	69	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	PCB 1016	U	U	U	110	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	PCB 1221	U	U	UI	110	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	PCB 1232	U	U	U	110	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	PCB 1242	U	U	U	110	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	PCB 1248	U	U	U	110	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	PCB 1254	U	U	U	110	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	PCB 1260	U	U	U	110	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	PCB 1262	U	U	U	110	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	PCB 1268	U	U	U	110	Qualify	1

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-BB35AR-11.0-11.5	JC14857-11A	ACETONE	U	39.4	39.4	11		
135-BB35AR-11.0-11.5	JC14857-11A	CARBON DISULFIDE	U	0.58J	0.58	2.1	Qualify	2
135-BB35AR-13.0-13.5	JC14857-12A	ACETONE	U	32.4	32.4	9.8		
135-BB35AR-14.0-14.5	JC14857-13A	ACETONE	U	39.1	39.1	10		
135-BB35AR-14.0-14.5	JC14857-13A	CARBON DISULFIDE	U	0.79J	0.79	2.1	Qualify	2
135-BB35AR-15.0-15.5	JC14857-14A	1,1,1-TRICHLOROETHANE	U	U	U	4.8	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	1,1,2,2-TETRACHLOROETHANE	U	U	U	4.8	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	1,1,2-TRICHLOROETHANE	U	U	U	4.8	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	1,1,2-TRICHLOROTRIFLUOROETHANE	U	U	U	12	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	1,1-DICHLOROETHANE	U	U	U	2.4	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	1,1-DICHLOROETHYLENE	U	U	U	2.4	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	1,2,3-TRICHLOROBENZENE	U	U	U	12	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	1,2,4-TRICHLOROBENZENE	U	U	U	12	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	U	U	U	4.8	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	1,2-DIBROMOETHANE(EDB)	U	U	U	2.4	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	1,2-DICHLOROBENZENE	U	U	U	2.4	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	1,2-DICHLOROETHANE	U	U	U	2.4	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	1,2-DICHLOROPROPANE	U	U	U	4.8	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	1,4-DICHLOROBENZENE	U	U	U	2.4	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	2-BUTANONE (MEK)	U	U	U	24	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	4-METHYL-2-PENTANONE (MIBK)	U	U	U	12	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	ACETONE	U	156	156	24	Qualify	1,9
135-BB35AR-15.0-15.5	JC14857-14A	BENZENE	U	U	U	1.2	Qualify	1

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-BB35AR-15.0-15.5	JC14857-14A	BROMODICHLOROMETHANE	U	U	U	4.8	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	BROMOMETHANE	U	U	U	12	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	CARBON DISULFIDE	U	6.7	6.7	4.8	Qualify	1,9
135-BB35AR-15.0-15.5	JC14857-14A	CARBON TETRACHLORIDE	U	U	U	4.8	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	CHLOROBENZENE	U	U	U	4.8	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	CHLOROBROMOMETHANE	U	U	U	12	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	CHLORODIBROMOMETHANE	U	U	U	4.8	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	CHLOROETHANE	U	U	U	12	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	CHLOROFORM	U	U	U	4.8	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	CHLOROMETHANE	U	U	U	12	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	CIS-1,2-DICHLOROETHENE	U	U	U	2.4	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	CIS-1,3-DICHLOROPROPENE	U	U	U	4.8	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	CYCLOHEXANE	U	U	U	4.8	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	DICHLORODIFLUOROMETHANE	U	U	U	12	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	DICHLOROMETHANE	U	U	U	12	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	ETHYLBENZENE	U	U	U	2.4	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	ISOPROPYLBENZENE	U	U	U	4.8	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	M+P-XYLENE	U	U	U	2.4	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	M-DICHLOROBENZENE	U	U	U	2.4	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	METHYL ACETATE	U	U	U	12	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	METHYL N-BUTYL KETONE	U	U	U	12	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	METHYLCYCLOHEXANE	U	U	U	4.8	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	METHYL-TERT-BUTYL ETHER	U	U	U	2.4	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	O-XYLENE	U	U	U	2.4	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	STYRENE (MONOMER)	U	U	U	4.8	Qualify	1

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-BB35AR-15.0-15.5	JC14857-14A	TETRACHLOROETHENE	U	U	U	4.8	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	TOLUENE	U	U	U	2.4	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	TRANS-1,2-DICHLOROETHENE	U	U	U	2.4	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	TRANS-1,3-DICHLOROPROPENE	U	U	U	4.8	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	TRIBROMOMETHANE	U	U	U	12	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	TRICHLOROETHYLENE	U	U	U	2.4	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	TRICHLOROFLUOROMETHANE	U	U	U	12	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	VINYL CHLORIDE	U	U	U	4.8	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	XYLENES	U	U	U	2.4	Qualify	1
135-BB35AR-3.0-3.5	JC14857-15A	CHLOROFORM	U	0.70J	0.70	3.6	Qualify	2
135-BB35AR-5.0-5.5	JC14857-16A	CHLOROFORM	U	0.53J	0.53	2.6	Qualify	2
135-BB35AR-7.0-7.5	JC14857-17A	ACETONE	U	13.6	13.6	13		
135-BB35AR-7.0-7.5	JC14857-17A	CARBON DISULFIDE	U	1.3J	1.3	2.5	Qualify	2
135-BB35AR-7.0-7.5X	JC14857-18A	CARBON DISULFIDE	U	1.0J	1.0	2.6	Qualify	2
135-BB35AR-9.0-9.5	JC14857-19A	CARBON DISULFIDE	U	1.1J	1.1	2.2	Qualify	2
135-BB36A-1.5-2.0	JC14857-20A	ACETONE	U	77.0	77.0	13		
135-BB36A-1.5-2.0	JC14857-20A	BENZENE	U	64.5	64.5	0.64		
135-BB36A-1.5-2.0	JC14857-20A	CARBON DISULFIDE	U	1.3J	1.3	2.6	Qualify	2
135-BB36A-1.5-2.0	JC14857-20A	CYCLOHEXANE	U	0.90J	0.90	2.6	Qualify	2
135-BB36A-1.5-2.0	JC14857-20A	ETHYLBENZENE	U	0.39J	0.39	1.3	Qualify	2
135-BB36A-1.5-2.0	JC14857-20A	ISOPROPYLBENZENE	U	0.39J	0.39	2.6	Qualify	2
135-BB36A-1.5-2.0	JC14857-20A	M+P-XYLENE	U	4.8	4.8	1.3		
135-BB36A-1.5-2.0	JC14857-20A	METHYLCYCLOHEXANE	U	2.6	2.6	2.6		
135-BB36A-1.5-2.0	JC14857-20A	O-XYLENE	U	2.6	2.6	1.3		
135-BB36A-1.5-2.0	JC14857-20A	STYRENE (MONOMER)	U	0.35J	0.35	2.6	Qualify	2

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-BB36A-1.5-2.0	JC14857-20A	TOLUENE	U	9.3	9.3	1.3		
135-BB36A-1.5-2.0	JC14857-20A	XYLENES	U	7.4	7.4	1.3		
135-BB36A-11.5-12.0	JC14857-21A	ACETONE	U	48.6	48.6	10		
135-BB36A-11.5-12.0	JC14857-21A	BENZENE	U	0.23J	0.23	0.51	Qualify	2
135-BB36A-11.5-12.0	JC14857-21A	CARBON DISULFIDE	U	0.92J	0.92	2.0	Qualify	2
135-BB36A-13.5-14.0	JC14857-22A	1,1,1-TRICHLOROETHANE	U	U	U	2.2	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	1,1,2,2-TETRACHLOROETHANE	U	U	U	2.2	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	1,1,2-TRICHLOROETHANE	U	U	U	2.2	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	1,1,2-TRICHLOROTRIFLUOROETHANE	U	U	U	5.4	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	1,1-DICHLOROETHANE	U	U	U	1.1	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	1,1-DICHLOROETHYLENE	U	U	U	1.1	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	1,2,3-TRICHLOROBENZENE	U	U	U	5.4	Qualify	8
135-BB36A-13.5-14.0	JC14857-22A	1,2,4-TRICHLOROBENZENE	U	U	U	5.4	Qualify	8
135-BB36A-13.5-14.0	JC14857-22A	1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	U	U	U	2.2	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	1,2-DIBROMOETHANE(EDB)	U	U	U	1.1	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	1,2-DICHLOROBENZENE	U	U	R	1.1	Reject	7
135-BB36A-13.5-14.0	JC14857-22A	1,2-DICHLOROETHANE	U	U	U	1.1	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	1,2-DICHLOROPROPANE	U	U	U	2.2	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	1,4-DICHLOROBENZENE	U	U	R	1.1	Reject	7
135-BB36A-13.5-14.0	JC14857-22A	2-BUTANONE (MEK)	U	U	U	11	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	4-METHYL-2-PENTANONE (MIBK)	U	U	U	5.4	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	ACETONE	U	69.7	69.7	11	Qualify	4
135-BB36A-13.5-14.0	JC14857-22A	BENZENE	U	U	U	0.54	Qualify	3

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-BB36A-13.5-14.0	JC14857-22A	BROMODICHLOROMETHANE	U	U	U	2.2	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	BROMOMETHANE	U	U	U	5.4	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	CARBON DISULFIDE	U	0.36J	0.36	2.2	Qualify	2,3
135-BB36A-13.5-14.0	JC14857-22A	CARBON TETRACHLORIDE	U	U	U	2.2	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	CHLOROBENZENE	U	U	U	2.2	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	CHLOROBROMOMETHANE	U	U	U	5.4	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	CHLORODIBROMOMETHANE	U	U	U	2.2	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	CHLOROETHANE	U	U	U	5.4	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	CHLOROFORM	U	U	U	2.2	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	CHLOROMETHANE	U	U	U	5.4	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	CIS-1,2-DICHLOROETHENE	U	U	U	1.1	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	CIS-1,3-DICHLOROPROPENE	U	U	U	2.2	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	CYCLOHEXANE	U	U	U	2.2	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	DICHLORODIFLUOROMETHANE	U	U	U	5.4	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	DICHLOROMETHANE	U	U	U	5.4	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	ETHYLBENZENE	U	U	U	1.1	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	ISOPROPYLBENZENE	U	U	U	2.2	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	M+P-XYLENE	U	U	U	1.1	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	M-DICHLOROBENZENE	U	U	R	1.1	Reject	7
135-BB36A-13.5-14.0	JC14857-22A	METHYL ACETATE	U	U	U	5.4	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	METHYL N-BUTYL KETONE	U	U	U	5.4	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	METHYLCYCLOHEXANE	U	U	U	2.2	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	METHYL-TERT-BUTYL ETHER	U	U	U	1.1	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	O-XYLENE	U	U	U	1.1	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	STYRENE (MONOMER)	U	U	R	2.2	Reject	7

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-BB36A-13.5-14.0	JC14857-22A	TETRACHLOROETHENE	U	U	U	2.2	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	TOLUENE	U	U	U	1.1	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	TRANS-1,2-DICHLOROETHENE	U	U	U	1.1	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	TRANS-1,3-DICHLOROPROPENE	U	U	U	2.2	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	TRIBROMOMETHANE	U	U	U	5.4	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	TRICHLOROETHYLENE	U	U	U	1.1	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	TRICHLOROFLUOROMETHANE	U	U	U	5.4	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	VINYL CHLORIDE	U	U	U	2.2	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	XYLENES	U	U	U	1.1	Qualify	3
135-BB36A-14.0-14.5	JC14857-23A	1,1,1-TRICHLOROETHANE	U	U	U	12	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	1,1,2,2-TETRACHLOROETHANE	U	U	U	12	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	1,1,2-TRICHLOROETHANE	U	U	U	12	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	1,1,2-TRICHLOROTRIFLUOROETHANE	U	U	U	30	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	1,1-DICHLOROETHANE	U	U	U	5.9	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	1,1-DICHLOROETHYLENE	U	U	U	5.9	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	1,2,3-TRICHLOROBENZENE	U	U	U	30	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	1,2,4-TRICHLOROBENZENE	U	U	U	30	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	U	U	U	12	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	1,2-DIBROMOETHANE(EDB)	U	U	U	5.9	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	1,2-DICHLOROBENZENE	U	U	U	5.9	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	1,2-DICHLOROETHANE	U	U	U	5.9	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	1,2-DICHLOROPROPANE	U	U	U	12	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	1,4-DICHLOROBENZENE	U	U	U	5.9	Qualify	1

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-BB36A-14.0-14.5	JC14857-23A	2-BUTANONE (MEK)	U	U	U	59	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	4-METHYL-2-PENTANONE (MIBK)	U	U	U	30	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	ACETONE	U	317	317	59	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	BENZENE	U	U	U	3.0	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	BROMODICHLOROMETHANE	U	U	U	12	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	BROMOMETHANE	U	U	U	30	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	CARBON DISULFIDE	U	9.7J	9.7	12	Qualify	1,2
135-BB36A-14.0-14.5	JC14857-23A	CARBON TETRACHLORIDE	U	U	U	12	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	CHLOROBENZENE	U	U	U	12	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	CHLOROBROMOMETHANE	U	U	U	30	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	CHLORODIBROMOMETHANE	U	U	U	12	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	CHLOROETHANE	U	U	U	30	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	CHLOROFORM	U	U	U	12	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	CHLOROMETHANE	U	U	U	30	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	CIS-1,2-DICHLOROETHENE	U	U	U	5.9	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	CIS-1,3-DICHLOROPROPENE	U	U	U	12	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	CYCLOHEXANE	U	U	U	12	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	DICHLORODIFLUOROMETHANE	U	U	U	30	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	DICHLOROMETHANE	U	U	U	30	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	ETHYLBENZENE	U	U	U	5.9	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	ISOPROPYLBENZENE	U	U	U	12	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	M+P-XYLENE	U	U	U	5.9	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	M-DICHLOROBENZENE	U	U	U	5.9	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	METHYL ACETATE	U	U	U	30	Qualify	1

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-BB36A-14.0-14.5	JC14857-23A	METHYL N-BUTYL KETONE	U	U	U	30	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	METHYLCYCLOHEXANE	U	U	U	12	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	METHYL-TERT-BUTYL ETHER	U	U	U	5.9	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	O-XYLENE	U	U	U	5.9	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	STYRENE (MONOMER)	U	U	U	12	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	TETRACHLOROETHENE	U	U	U	12	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	TOLUENE	U	U	U	5.9	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	TRANS-1,2-DICHLOROETHENE	U	U	U	5.9	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	TRANS-1,3-DICHLOROPROPENE	U	U	U	12	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	TRIBROMOMETHANE	U	U	U	30	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	TRICHLOROETHYLENE	U	U	U	5.9	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	TRICHLOROFLUOROMETHANE	U	U	U	30	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	VINYL CHLORIDE	U	U	U	12	Qualify	1
135-BB36A-14.0-14.5	JC14857-23A	XYLENES	U	U	U	5.9	Qualify	1
135-BB36A-3.5-4.0	JC14857-24A	2-BUTANONE (MEK)	U	41.1	41.1	14		
135-BB36A-3.5-4.0	JC14857-24A	ACETONE	U	357J	357	760	Qualify	2
135-BB36A-3.5-4.0	JC14857-24A	BENZENE	U	25.1	25.1	0.72		
135-BB36A-3.5-4.0	JC14857-24A	CARBON DISULFIDE	U	6.5	6.5	2.9		
135-BB36A-3.5-4.0	JC14857-24A	ISOPROPYLBENZENE	U	0.64J	0.64	2.9	Qualify	2
135-BB36A-3.5-4.0	JC14857-24A	METHYLCYCLOHEXANE	U	0.80J	0.80	2.9	Qualify	2
135-BB36A-5.5-6.0	JC14857-25A	ACETONE	U	25.4	25.4	9.2		
135-BB36A-5.5-6.0	JC14857-25A	BENZENE	U	0.86	0.86	0.46		
135-BB36A-7.5-8.0	JC14857-26A	ACETONE	U	26.5	26.5	9.9		
135-BB36A-7.5-8.0	JC14857-26A	BENZENE	U	1.8	1.8	0.50		
135-BB36A-7.5-8.0	JC14857-26A	CARBON DISULFIDE	U	0.39J	0.39	2.0	Qualify	2

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-BB36A-9.5-10.0	JC14857-27A	BENZENE	U	2.6	2.6	0.47		
135-CC28A-10.0-10.5	JC14857-28A	ACETONE	U	24.3	24.3	23	Qualify	5
135-CC28A-10.0-10.5	JC14857-28A	CARBON DISULFIDE	U	2.8J	2.8	4.6	Qualify	2
135-CC28A-10.0-10.5	JC14857-28A	CYCLOHEXANE	U	5.8	5.8	4.6	Qualify	5
135-CC28A-10.0-10.5	JC14857-28A	METHYLCYCLOHEXANE	U	40.4	40.4	4.6	Qualify	5
135-CC28A-10.0-10.5	JC14857-28A	METHYL-TERT-BUTYL ETHER	U	0.82J	0.82	2.3	Qualify	2
135-CC28A-10.0-10.5X	JC14857-29A	ACETONE	U	78.9	78.9	20	Qualify	5
135-CC28A-10.0-10.5X	JC14857-29A	CARBON DISULFIDE	U	5.5	5.5	4.0		
135-CC28A-10.0-10.5X	JC14857-29A	CYCLOHEXANE	U	0.68J	0.68	4.0	Qualify	2,5
135-CC28A-10.0-10.5X	JC14857-29A	METHYLCYCLOHEXANE	U	2.5J	2.5	4.0	Qualify	2,5
135-CC28A-10.0-10.5X	JC14857-29A	METHYL-TERT-BUTYL ETHER	U	0.61J	0.61	2.0	Qualify	2
135-CC28A-12.0-12.5	JC14857-30A	1,2,3-TRICHLOROBENZENE	U	U	U	8.5	Qualify	8
135-CC28A-12.0-12.5	JC14857-30A	1,2,4-TRICHLOROBENZENE	U	U	U	8.5	Qualify	8
135-CC28A-12.0-12.5	JC14857-30A	1,2-DIBROMOETHANE(EDB)	U	U	R	1.7	Reject	7
135-CC28A-12.0-12.5	JC14857-30A	1,2-DICHLOROBENZENE	U	U	R	1.7	Reject	7
135-CC28A-12.0-12.5	JC14857-30A	1,2-DICHLOROETHANE	U	U	U	1.7	Qualify	6
135-CC28A-12.0-12.5	JC14857-30A	1,4-DICHLOROBENZENE	U	U	R	1.7	Reject	7
135-CC28A-12.0-12.5	JC14857-30A	ACETONE	U	63.3	63.3	17		
135-CC28A-12.0-12.5	JC14857-30A	CARBON DISULFIDE	U	2.4J	2.4	3.4	Qualify	2,3
135-CC28A-12.0-12.5	JC14857-30A	CHLOROBENZENE	U	U	R	3.4	Reject	7
135-CC28A-12.0-12.5	JC14857-30A	CHLORODIBROMOMETHANE	U	U	R	3.4	Reject	7
135-CC28A-12.0-12.5	JC14857-30A	CIS-1,3-DICHLOROPROPENE	U	U	R	3.4	Reject	7
135-CC28A-12.0-12.5	JC14857-30A	M-DICHLOROBENZENE	U	U	R	1.7	Reject	7
135-CC28A-12.0-12.5	JC14857-30A	METHYL N-BUTYL KETONE	U	U	U	8.5	Qualify	6
135-CC28A-12.0-12.5	JC14857-30A	METHYL-TERT-BUTYL ETHER	U	1.3J	1.3	1.7	Qualify	2

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-CC28A-12.0-12.5	JC14857-30A	STYRENE (MONOMER)	U	U	R	3.4	Reject	7
135-CC28A-12.0-12.5	JC14857-30A	TRANS-1,2-DICHLOROETHENE	U	U	R	1.7	Reject	7
135-CC28A-12.0-12.5	JC14857-30A	TRANS-1,3-DICHLOROPROPENE	U	U	R	3.4	Reject	7
135-CC28A-12.0-12.5	JC14857-30A	TRIBROMOMETHANE	U	U	U	8.5	Qualify	6
135-CC28A-14.0-14.5	JC14857-31A	2-BUTANONE (MEK)	U	34.2	34.2	17		
135-CC28A-14.0-14.5	JC14857-31A	ACETONE	U	248	248	17		
135-CC28A-14.0-14.5	JC14857-31A	CARBON DISULFIDE	U	9.6	9.6	3.4		
135-CC28A-14.0-14.5	JC14857-31A	CYCLOHEXANE	U	0.65J	0.65	3.4	Qualify	2
135-CC28A-14.0-14.5	JC14857-31A	METHYLCYCLOHEXANE	U	6.8	6.8	3.4		
135-CC28A-16.0-16.5	JC14857-32A	2-BUTANONE (MEK)	U	77.3	77.3	24		
135-CC28A-16.0-16.5	JC14857-32A	ACETONE	U	650E	650	24	Qualify	10
135-CC28A-16.0-16.5	JC14857-32A	CARBON DISULFIDE	U	11.4	11.4	4.7		
135-CC28A-16.0-16.5	JC14857-32A	METHYLCYCLOHEXANE	U	2.0J	2.0	4.7	Qualify	2
135-CC28A-18.0-18.5	JC14857-33A	2-BUTANONE (MEK)	U	57.5	57.5	22		
135-CC28A-18.0-18.5	JC14857-33A	ACETONE	U	419	419	22		
135-CC28A-18.0-18.5	JC14857-33A	CARBON DISULFIDE	U	6.8	6.8	4.3		
135-CC28A-18.0-18.5	JC14857-33A	METHYLCYCLOHEXANE	U	0.67J	0.67	4.3	Qualify	2
135-CC28A-18.5-19.0	JC14857-34A	ACETONE	U	105	105	19		
135-CC28A-18.5-19.0	JC14857-34A	CARBON DISULFIDE	U	3.7	3.7	3.7		
135-CC28A-18.5-19.0	JC14857-34A	METHYLCYCLOHEXANE	U	0.62J	0.62	3.7	Qualify	2
135-CC28A-19.0-19.5	JC14857-35A	1,1,1-TRICHLOROETHANE	U	U	U	9.4	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	1,1,2,2-TETRACHLOROETHANE	U	U	U	9.4	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	1,1,2-TRICHLOROETHANE	U	U	U	9.4	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	1,1,2-TRICHLOROTRIFLUOROETHANE	U	U	U	23	Qualify	1

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-CC28A-19.0-19.5	JC14857-35A	1,1-DICHLOROETHANE	U	U	U	4.7	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	1,1-DICHLOROETHYLENE	U	U	U	4.7	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	1,2,3-TRICHLOROBENZENE	U	U	U	23	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	1,2,4-TRICHLOROBENZENE	U	U	U	23	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	U	U	U	9.4	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	1,2-DIBROMOETHANE(EDB)	U	U	U	4.7	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	1,2-DICHLOROBENZENE	U	U	U	4.7	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	1,2-DICHLOROETHANE	U	U	U	4.7	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	1,2-DICHLOROPROPANE	U	U	U	9.4	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	1,4-DICHLOROBENZENE	U	U	U	4.7	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	2-BUTANONE (MEK)	U	U	U	47	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	4-METHYL-2-PENTANONE (MIBK)	U	U	U	23	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	ACETONE	U	54.4	54.4	47	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	BENZENE	U	U	U	2.3	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	BROMODICHLOROMETHANE	U	U	U	9.4	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	BROMOMETHANE	U	U	U	23	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	CARBON DISULFIDE	U	4.9J	4.9	9.4	Qualify	1,2
135-CC28A-19.0-19.5	JC14857-35A	CARBON TETRACHLORIDE	U	U	U	9.4	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	CHLOROBENZENE	U	U	U	9.4	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	CHLOROBROMOMETHANE	U	U	U	23	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	CHLORODIBROMOMETHANE	U	U	U	9.4	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	CHLOROETHANE	U	U	U	23	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	CHLOROFORM	U	U	U	9.4	Qualify	1

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135-CC28A-19.0-19.5	JC14857-35A	CHLOROMETHANE	U	U	U	23	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	CIS-1,2-DICHLOROETHENE	U	U	U	4.7	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	CIS-1,3-DICHLOROPROPENE	U	U	U	9.4	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	CYCLOHEXANE	U	U	U	9.4	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	DICHLORODIFLUOROMETHANE	U	U	U	23	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	DICHLOROMETHANE	U	U	U	23	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	ETHYLBENZENE	U	U	U	4.7	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	ISOPROPYLBENZENE	U	U	U	9.4	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	M+P-XYLENE	U	U	U	4.7	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	M-DICHLOROBENZENE	U	U	U	4.7	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	METHYL ACETATE	U	U	U	23	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	METHYL N-BUTYL KETONE	U	U	U	23	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	METHYLCYCLOHEXANE	U	U	U	9.4	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	METHYL-TERT-BUTYL ETHER	U	U	U	4.7	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	O-XYLENE	U	U	U	4.7	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	STYRENE (MONOMER)	U	U	U	9.4	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	TETRACHLOROETHENE	U	U	U	9.4	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	TOLUENE	U	U	U	4.7	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	TRANS-1,2-DICHLOROETHENE	U	U	U	4.7	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	TRANS-1,3-DICHLOROPROPENE	U	U	U	9.4	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	TRIBROMOMETHANE	U	U	U	23	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	TRICHLOROETHYLENE	U	U	U	4.7	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	TRICHLOROFLUOROMETHANE	U	U	U	23	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	VINYL CHLORIDE	U	U	U	9.4	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	XYLENES	U	U	U	4.7	Qualify	1

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-CC31A-10.0-10.5	JC14857-1A	2-BUTANONE (MEK)	U	18.1	18.1	18		
135-CC31A-10.0-10.5	JC14857-1A	ACETONE	U	174	174	18		
135-CC31A-10.0-10.5	JC14857-1A	BENZENE	U	1.1	1.1	0.88		
135-CC31A-10.0-10.5	JC14857-1A	CARBON DISULFIDE	U	0.68J	0.68	3.5	Qualify	2
135-CC31A-10.0-10.5	JC14857-1A	ETHYLBENZENE	U	2.2	2.2	1.8		
135-CC31A-10.0-10.5	JC14857-1A	ISOPROPYLBENZENE	U	9.7	9.7	3.5		
135-CC31A-10.0-10.5	JC14857-1A	M+P-XYLENE	U	6.0	6.0	1.8		
135-CC31A-10.0-10.5	JC14857-1A	METHYLCYCLOHEXANE	U	8.4	8.4	3.5		
135-CC31A-10.0-10.5	JC14857-1A	O-XYLENE	U	2.9	2.9	1.8		
135-CC31A-10.0-10.5	JC14857-1A	TOLUENE	U	0.51J	0.51	1.8	Qualify	2
135-CC31A-10.0-10.5	JC14857-1A	XYLENES	U	8.8	8.8	1.8		
135-CC31A-12.0-12.5	JC14857-2A	ACETONE	U	91.8	91.8	17		
135-CC31A-12.0-12.5	JC14857-2A	BENZENE	U	6.3	6.3	0.85		
135-CC31A-12.0-12.5	JC14857-2A	CARBON DISULFIDE	U	1.6J	1.6	3.4	Qualify	2
135-CC31A-12.0-12.5	JC14857-2A	ETHYLBENZENE	U	4.3	4.3	1.7		
135-CC31A-12.0-12.5	JC14857-2A	ISOPROPYLBENZENE	U	5.1	5.1	3.4		
135-CC31A-12.0-12.5	JC14857-2A	M+P-XYLENE	U	6.5	6.5	1.7		
135-CC31A-12.0-12.5	JC14857-2A	METHYLCYCLOHEXANE	U	0.94J	0.94	3.4	Qualify	2
135-CC31A-12.0-12.5	JC14857-2A	METHYL-TERT-BUTYL ETHER	U	0.57J	0.57	1.7	Qualify	2
135-CC31A-12.0-12.5	JC14857-2A	O-XYLENE	U	2.8	2.8	1.7		
135-CC31A-12.0-12.5	JC14857-2A	TOLUENE	U	3.8	3.8	1.7		
135-CC31A-12.0-12.5	JC14857-2A	XYLENES	U	9.3	9.3	1.7		
135-CC31A-14.0-14.5	JC14857-3A	1,1,1-TRICHLOROETHANE	U	U	U	3.4	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	1,1,2,2-TETRACHLOROETHANE	U	U	U	3.4	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	1,1,2-TRICHLOROETHANE	U	U	U	3.4	Qualify	1

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-CC31A-14.0-14.5	JC14857-3A	1,1,2-TRICHLOROTRIFLUOROETHANE	U	U	U	8.5	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	1,1-DICHLOROETHANE	U	U	U	1.7	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	1,1-DICHLOROETHYLENE	U	U	U	1.7	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	1,2,3-TRICHLOROBENZENE	U	U	U	8.5	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	1,2,4-TRICHLOROBENZENE	U	U	U	8.5	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	U	U	U	3.4	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	1,2-DIBROMOETHANE(EDB)	U	U	U	1.7	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	1,2-DICHLOROBENZENE	U	U	U	1.7	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	1,2-DICHLOROETHANE	U	U	U	1.7	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	1,2-DICHLOROPROPANE	U	U	U	3.4	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	1,4-DICHLOROBENZENE	U	U	U	1.7	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	2-BUTANONE (MEK)	U	12.0J	12.0	17	Qualify	1,2
135-CC31A-14.0-14.5	JC14857-3A	4-METHYL-2-PENTANONE (MIBK)	U	U	U	8.5	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	ACETONE	U	90.6	90.6	17	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	BENZENE	U	0.78J	0.78	0.85	Qualify	1,2
135-CC31A-14.0-14.5	JC14857-3A	BROMODICHLOROMETHANE	U	U	U	3.4	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	BROMOMETHANE	U	U	U	8.5	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	CARBON DISULFIDE	U	3.1J	3.1	3.4	Qualify	1,2
135-CC31A-14.0-14.5	JC14857-3A	CARBON TETRACHLORIDE	U	U	U	3.4	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	CHLOROBENZENE	U	U	U	3.4	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	CHLOROBROMOMETHANE	U	U	U	8.5	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	CHLORODIBROMOMETHANE	U	U	U	3.4	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	CHLOROETHANE	U	U	U	8.5	Qualify	1

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-CC31A-14.0-14.5	JC14857-3A	CHLOROFORM	U	U	U	3.4	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	CHLOROMETHANE	U	U	U	8.5	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	CIS-1,2-DICHLOROETHENE	U	U	U	1.7	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	CIS-1,3-DICHLOROPROPENE	U	U	U	3.4	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	CYCLOHEXANE	U	U	U	3.4	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	DICHLORODIFLUOROMETHANE	U	U	U	8.5	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	DICHLOROMETHANE	U	U	U	8.5	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	ETHYLBENZENE	U	0.59J	0.59	1.7	Qualify	1,2
135-CC31A-14.0-14.5	JC14857-3A	ISOPROPYLBENZENE	U	1.1J	1.1	3.4	Qualify	1,2
135-CC31A-14.0-14.5	JC14857-3A	M+P-XYLENE	U	1.1J	1.1	1.7	Qualify	1,2
135-CC31A-14.0-14.5	JC14857-3A	M-DICHLOROBENZENE	U	U	U	1.7	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	METHYL ACETATE	U	U	U	8.5	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	METHYL N-BUTYL KETONE	U	U	U	8.5	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	METHYLCYCLOHEXANE	U	1.6J	1.6	3.4	Qualify	1,2
135-CC31A-14.0-14.5	JC14857-3A	METHYL-TERT-BUTYL ETHER	U	0.72J	0.72	1.7	Qualify	1,2
135-CC31A-14.0-14.5	JC14857-3A	O-XYLENE	U	0.79J	0.79	1.7	Qualify	1,2
135-CC31A-14.0-14.5	JC14857-3A	STYRENE (MONOMER)	U	U	U	3.4	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	TETRACHLOROETHENE	U	U	U	3.4	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	TOLUENE	U	0.79J	0.79	1.7	Qualify	1,2
135-CC31A-14.0-14.5	JC14857-3A	TRANS-1,2-DICHLOROETHENE	U	U	U	1.7	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	TRANS-1,3-DICHLOROPROPENE	U	U	U	3.4	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	TRIBROMOMETHANE	U	U	U	8.5	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	TRICHLOROETHYLENE	U	U	U	1.7	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	TRICHLOROFLUOROMETHANE	U	U	U	8.5	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	VINYL CHLORIDE	U	U		3.4	Qualify	1

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-CC31A-14.0-14.5	JC14857-3A	XYLENES	U	1.9	1.9	1.7	Qualify	1
135-CC31A-16.0-16.5	JC14857-4A	CARBON DISULFIDE	U	2.0J	2.0	3.9	Qualify	2
135-CC31A-16.0-16.5	JC14857-4A	METHYL-TERT-BUTYL ETHER	U	0.39J	0.39	1.9	Qualify	2
135-CC31A-16.5-17.0	JC14857-5A	1,1,1-TRICHLOROETHANE	U	U	U	7.7	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	1,1,2,2-TETRACHLOROETHANE	U	U	U	7.7	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	1,1,2-TRICHLOROETHANE	U	U	U	7.7	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	1,1,2-TRICHLOROTRIFLUOROETHANE	U	U	U	19	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	1,1-DICHLOROETHANE	U	U	U	3.8	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	1,1-DICHLOROETHYLENE	U	U	U	3.8	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	1,2,3-TRICHLOROBENZENE	U	U	U	19	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	1,2,4-TRICHLOROBENZENE	U	U	U	19	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	U	U	U	7.7	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	1,2-DIBROMOETHANE(EDB)	U	U	U	3.8	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	1,2-DICHLOROBENZENE	U	U	U	3.8	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	1,2-DICHLOROETHANE	U	U	U	3.8	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	1,2-DICHLOROPROPANE	U	U	U	7.7	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	1,4-DICHLOROBENZENE	U	U	U	3.8	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	2-BUTANONE (MEK)	U	U	U	38	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	4-METHYL-2-PENTANONE (MIBK)	U	U	U	19	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	ACETONE	U	U	U	38	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	BENZENE	U	U	U	1.9	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	BROMODICHLOROMETHANE	U	U	U	7.7	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	BROMOMETHANE	U	U	U	19	Qualify	1

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-CC31A-16.5-17.0	JC14857-5A	CARBON DISULFIDE	U	5.4J	5.4	7.7	Qualify	1,2
135-CC31A-16.5-17.0	JC14857-5A	CARBON TETRACHLORIDE	U	U	U	7.7	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	CHLOROBENZENE	U	U	U	7.7	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	CHLOROBROMOMETHANE	U	U	U	19	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	CHLORODIBROMOMETHANE	U	U	U	7.7	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	CHLOROETHANE	U	U	U	19	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	CHLOROFORM	U	U	U	7.7	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	CHLOROMETHANE	U	U	U	19	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	CIS-1,2-DICHLOROETHENE	U	U	U	3.8	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	CIS-1,3-DICHLOROPROPENE	U	U	U	7.7	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	CYCLOHEXANE	U	U	U	7.7	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	DICHLORODIFLUOROMETHANE	U	U	U	19	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	DICHLOROMETHANE	U	U	U	19	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	ETHYLBENZENE	U	U	U	3.8	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	ISOPROPYLBENZENE	U	U	U	7.7	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	M+P-XYLENE	U	U	U	3.8	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	M-DICHLOROBENZENE	U	U	U	3.8	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	METHYL ACETATE	U	U	U	19	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	METHYL N-BUTYL KETONE	U	U	U	19	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	METHYLCYCLOHEXANE	U	U	U	7.7	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	METHYL-TERT-BUTYL ETHER	U	U	U	3.8	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	O-XYLENE	U	U	U	3.8	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	STYRENE (MONOMER)	U	U	U	7.7	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	TETRACHLOROETHENE	U	U	U	7.7	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	TOLUENE	U	U	U	3.8	Qualify	1

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-CC31A-16.5-17.0	JC14857-5A	TRANS-1,2-DICHLOROETHENE	U	U	U	3.8	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	TRANS-1,3-DICHLOROPROPENE	U	U	U	7.7	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	TRIBROMOMETHANE	U	U	U	19	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	TRICHLOROETHYLENE	U	U	U	3.8	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	TRICHLOROFLUOROMETHANE	U	U	U	19	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	VINYL CHLORIDE	U	U	U	7.7	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	XYLENES	U	U	U	3.8	Qualify	1
135-CC31A-6.0-6.5	JC14857-8A	METHYLCYCLOHEXANE	U	68.0J	68.0	180	Qualify	2
135-CC31A-8.0-8.5	JC14857-9A	METHYLCYCLOHEXANE	U	262	262	210		
135-CC31A-8.0-8.5	JC14857-9A	TOLUENE	U	24.2J	24.2	100	Qualify	2

Note: A “U” under Method Blank column indicates a nondetect result.
A “U” under the Laboratory Sample Result and Validation Sample Result columns indicates a nondetect result at the RL.

NJDEP Laboratory Footnote

1. The result was estimated because the percent solids were less than 50%.

2. The reported result was greater than the MDL but less than the RL and therefore was estimated (J).

3. The positive and /or nondetected values were estimated because the MS and/or MSD recoveries were below the QC criteria.

4. The positive values were estimated because the MS and/or MSD recoveries exceeded the QC criteria. A high bias may be present.

5. The result was estimated because the field duplicate RPD exceeded the QC criteria for results > 5X the RL.

6. The positive and nondetect values were estimated because the MS/MSD RPD exceeded the QC criteria.

7. The VOC or SVOC result was **rejected** because the MS and/or MSD recovery was below the lower limit for rejection.

8. The VOC or SVOC result was estimated because the MS and/or MSD recovery was below the lower limit for rejection, but the laboratory lower limit was also below the lower limit for rejection.

9. The result was qualified because the laboratory duplicate RPD was outside of QC limits.

10. The reported result exceeded the calibration range due to matrix interference and was therefore estimated.

SVOC Soil Target Analyte Summary Hit List

Site Name PPG Site 135/South Supplemental PDI Soil Sampling
Sampling Dates February 25, 2016
Lab Name/ID Accutest, Dayton, NJ
SDG No JC14857A
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID 135-FB20160225

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-BB35AR-1.0-1.5	JC14857-10A	1-1'-BIPHENYL	U	32.0J	32.0	73	Qualify	2
135-BB35AR-1.0-1.5	JC14857-10A	2-METHYLNAPHTHALENE	U	115	115	73		
135-BB35AR-1.0-1.5	JC14857-10A	3+4-METHYLPHENOL	U	43.6J	43.6	73	Qualify	2
135-BB35AR-1.0-1.5	JC14857-10A	ACENAPHTHENE	U	160	160	36		
135-BB35AR-1.0-1.5	JC14857-10A	ACENAPHTHYLENE	U	707	707	36		
135-BB35AR-1.0-1.5	JC14857-10A	ACETOPHENONE	U	21.5J	21.5	180	Qualify	2
135-BB35AR-1.0-1.5	JC14857-10A	ANTHRACENE	U	1290	1290	36		
135-BB35AR-1.0-1.5	JC14857-10A	BENZALDEHYDE	U	47.8J	47.8	180	Qualify	2
135-BB35AR-1.0-1.5	JC14857-10A	BENZO(A)ANTHRACENE	U	4650	4650	180		
135-BB35AR-1.0-1.5	JC14857-10A	BENZO(A)PYRENE	U	4380	4380	180		
135-BB35AR-1.0-1.5	JC14857-10A	BENZO(B)FLUORANTHENE	U	5530	5530	180		
135-BB35AR-1.0-1.5	JC14857-10A	BENZO(G,H,I)PERYLENE	U	2590	2590	36		
135-BB35AR-1.0-1.5	JC14857-10A	BENZO(K)FLUORANTHENE	U	2010	2010	36		
135-BB35AR-1.0-1.5	JC14857-10A	BIS(2-ETHYLHEXYL)PHTHALATE	U	52.7J	52.7	73	Qualify	2
135-BB35AR-1.0-1.5	JC14857-10A	CARBAZOLE	U	269	269	73		
135-BB35AR-1.0-1.5	JC14857-10A	CHRYSENE	U	4660	4660	180		
135-BB35AR-1.0-1.5	JC14857-10A	DIBENZO(A,H)ANTHRACENE	U	816	816	36		
135-BB35AR-1.0-1.5	JC14857-10A	DIBENZOFURAN	U	132	132	73		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-BB35AR-1.0-1.5	JC14857-10A	FLUORANTHENE	U	7840	7840	180		
135-BB35AR-1.0-1.5	JC14857-10A	FLUORENE	U	232	232	36		
135-BB35AR-1.0-1.5	JC14857-10A	INDENO(1,2,3-CD)PYRENE	U	2970	2970	36		
135-BB35AR-1.0-1.5	JC14857-10A	NAPHTHALENE	U	265	265	36		
135-BB35AR-1.0-1.5	JC14857-10A	PHENANTHRENE	U	3340	3340	36		
135-BB35AR-1.0-1.5	JC14857-10A	PHENOL	U	27.6J	27.6	73	Qualify	2
135-BB35AR-1.0-1.5	JC14857-10A	PYRENE	U	7260	7260	180		
135-BB35AR-11.0-11.5	JC14857-11A	ANTHRACENE	U	28.0J	28.0	39	Qualify	2
135-BB35AR-11.0-11.5	JC14857-11A	BENZO(A)ANTHRACENE	U	61.3	61.3	39		
135-BB35AR-11.0-11.5	JC14857-11A	BENZO(A)PYRENE	U	53.8	53.8	39		
135-BB35AR-11.0-11.5	JC14857-11A	BENZO(B)FLUORANTHENE	U	56.8	56.8	39		
135-BB35AR-11.0-11.5	JC14857-11A	BENZO(G,H,I)PERYLENE	U	33.1J	33.1	39	Qualify	2
135-BB35AR-11.0-11.5	JC14857-11A	BENZO(K)FLUORANTHENE	U	35.9J	35.9	39	Qualify	2
135-BB35AR-11.0-11.5	JC14857-11A	CARBAZOLE	U	16.8J	16.8	79	Qualify	2
135-BB35AR-11.0-11.5	JC14857-11A	CHRYSENE	U	65.2	65.2	39		
135-BB35AR-11.0-11.5	JC14857-11A	FLUORANTHENE	U	121	121	39		
135-BB35AR-11.0-11.5	JC14857-11A	FLUORENE	U	16.3J	16.3	39	Qualify	2
135-BB35AR-11.0-11.5	JC14857-11A	INDENO(1,2,3-CD)PYRENE	U	28.3J	28.3	39	Qualify	2
135-BB35AR-11.0-11.5	JC14857-11A	NAPHTHALENE	U	21.9J	21.9	39	Qualify	2
135-BB35AR-11.0-11.5	JC14857-11A	PHENANTHRENE	U	120	120	39		
135-BB35AR-11.0-11.5	JC14857-11A	PYRENE	U	131	131	39		
135-BB35AR-13.0-13.5	JC14857-12A	BENZO(A)ANTHRACENE	U	18.6J	18.6	40	Qualify	2
135-BB35AR-13.0-13.5	JC14857-12A	BENZO(B)FLUORANTHENE	U	18.3J	18.3	40	Qualify	2
135-BB35AR-13.0-13.5	JC14857-12A	PHENANTHRENE	U	16.6J	16.6	40	Qualify	2
135-BB35AR-14.0-14.5	JC14857-13A	ANTHRACENE	U	22.2J	22.2	37	Qualify	2

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-BB35AR-14.0-14.5	JC14857-13A	BENZO(A)ANTHRACENE	U	60.8	60.8	37		
135-BB35AR-14.0-14.5	JC14857-13A	BENZO(A)PYRENE	U	46.7	46.7	37		
135-BB35AR-14.0-14.5	JC14857-13A	BENZO(B)FLUORANTHENE	U	60.5	60.5	37		
135-BB35AR-14.0-14.5	JC14857-13A	BENZO(G,H,I)PERYLENE	U	29.3J	29.3	37	Qualify	2
135-BB35AR-14.0-14.5	JC14857-13A	BENZO(K)FLUORANTHENE	U	36.2J	36.2	37	Qualify	2
135-BB35AR-14.0-14.5	JC14857-13A	CARBAZOLE	U	17.1J	17.1	75	Qualify	2
135-BB35AR-14.0-14.5	JC14857-13A	CHRYSENE	U	57.1	57.1	37		
135-BB35AR-14.0-14.5	JC14857-13A	FLUORANTHENE	U	122	122	37		
135-BB35AR-14.0-14.5	JC14857-13A	INDENO(1,2,3-CD)PYRENE	U	26.7J	26.7	37	Qualify	2
135-BB35AR-14.0-14.5	JC14857-13A	PHENANTHRENE	U	107	107	37		
135-BB35AR-14.0-14.5	JC14857-13A	PYRENE	U	106	106	37		
135-BB35AR-15.0-15.5	JC14857-14A	1,2,4,5-TETRACHLOROBENZENE	U	U	U	390	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	1,4-DIOXANE	U	U	U	78	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	1-1'-BIPHENYL	U	U	U	160	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	2,2'-OXYBIS(1-CHLOROPROPANE)	U	U	U	160	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	2,3,4,6-Tetrachlorophenol	U	U	U	390	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	2,4,5-TRICHLOROPHENOL	U	U	U	390	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	2,4,6-TRICHLOROPHENOL	U	U	U	390	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	2,4-DICHLOROPHENOL	U	U	U	390	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	2,4-DIMETHYLPHENOL	U	U	U	390	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	2,4-DINITROPHENOL	U	U	U	390	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	2,4-DINITROTOLUENE	U	U	U	78	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	2,6-DINITROTOLUENE	U	U	U	78	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	2-CHLORONAPHTHALENE	U	U	U	160	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	2-CHLOROPHENOL	U	U	U	160	Qualify	1

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135-BB35AR-15.0-15.5	JC14857-14A	2-METHYLNAPHTHALENE	U	U	U	160	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	2-METHYLPHENOL	U	U	U	160	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	2-NITROANILINE	U	U	U	390	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	2-NITROPHENOL	U	U	U	390	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	3,3'-DICHLOROBENZIDINE	U	U	U	160	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	3,5,5-TRIMETHYL-2-CYCLOHEXENE-1-ONE	U	U	U	160	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	3+4-METHYLPHENOL	U	U	U	160	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	3-NITROANILINE	U	U	U	390	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	4,6-DINITRO-2-METHYLPHENOL	U	U	U	390	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	4-BROMOPHENYL PHENYL ETHER	U	U	U	160	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	4-CHLORO-3-METHYLPHENOL	U	U	U	390	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	4-CHLOROPHENYL PHENYL ETHER	U	U	U	160	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	4-NITROPHENOL	U	U	U	780	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	ACENAPHTHENE	U	U	U	78	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	ACENAPHTHYLENE	U	73.3J	73.3	78	Qualify	1,2
135-BB35AR-15.0-15.5	JC14857-14A	ACETOPHENONE	U	U	U	390	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	ANTHRACENE	U	47.3J	47.3	78	Qualify	1,2
135-BB35AR-15.0-15.5	JC14857-14A	ATRAZINE	U	U	U	160	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	BENZALDEHYDE	U	56.9J	56.9	390	Qualify	1,2
135-BB35AR-15.0-15.5	JC14857-14A	BENZO(A)ANTHRACENE	U	U	U	78	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	BENZO(A)PYRENE	U	U	U	78	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	BENZO(B)FLUORANTHENE	U	U	U	78	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	BENZO(G,H,I)PERYLENE	U	U	U	78	Qualify	1

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135-BB35AR-15.0-15.5	JC14857-14A	BENZO(K)FLUORANTHENE	U	U	U	78	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	BENZYL BUTYL PHTHALATE	U	U	U	160	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	BIS(-2-CHLOROETHOXY)METHANE	U	U	U	160	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	BIS(2-CHLOROETHYL)ETHER	U	U	U	160	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	BIS(2-ETHYLHEXYL)PHTHALATE	U	U	U	160	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	CAPROLACTAM	U	U	U	160	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	CARBAZOLE	U	35.6J	35.6	160	Qualify	1,2
135-BB35AR-15.0-15.5	JC14857-14A	CHRYSENE	U	U	U	78	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	DIBENZO(A,H)ANTHRACENE	U	U	U	78	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	DIBENZOFURAN	U	U	U	160	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	DIETHYL PHTHALATE	U	U	U	160	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	DIMETHYL PHTHALATE	U	U	U	160	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	DI-N-BUTYLPHTHALATE	U	U	U	160	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	DI-N-OCTYL PHTHALATE	U	U	U	160	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	FLUORANTHENE	U	92.9	92.9	78	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	FLUORENE	U	61.9J	61.9	78	Qualify	1,2
135-BB35AR-15.0-15.5	JC14857-14A	HEXACHLORO-1,3-BUTADIENE	U	U	U	78	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	HEXACHLOROBENZENE	U	U	U	160	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	HEXACHLOROCYCLOPENTADIENE	U	U	U	780	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	HEXACHLOROETHANE	U	U	U	390	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	INDENO(1,2,3-CD)PYRENE	U	U	U	78	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	NAPHTHALENE	U	U	U	78	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	NITROBENZENE	U	U	U	160	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	N-NITROSO-DI-N-PROPYLAMINE	U	U	U	160	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	N-NITROSODIPHENYLAMINE	U	U	U	390	Qualify	1

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135-BB35AR-15.0-15.5	JC14857-14A	P-CHLOROANILINE	U	U	U	390	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	PENTACHLOROPHENOL	U	U	U	390	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	PHENANTHRENE	U	131	131	78	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	PHENOL	U	U	U	160	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	P-NITROANILINE	U	U	U	390	Qualify	1
135-BB35AR-15.0-15.5	JC14857-14A	PYRENE	U	89.9	89.9	78	Qualify	1
135-BB35AR-3.0-3.5	JC14857-15A	1-1'-BIPHENYL	U	151	151	86		
135-BB35AR-3.0-3.5	JC14857-15A	2,4-DIMETHYLPHENOL	U	91.9J	91.9	220	Qualify	2
135-BB35AR-3.0-3.5	JC14857-15A	2-METHYLNAPHTHALENE	U	391	391	86		
135-BB35AR-3.0-3.5	JC14857-15A	3+4-METHYLPHENOL	U	201	201	86		
135-BB35AR-3.0-3.5	JC14857-15A	ACENAPHTHENE	U	662	662	43		
135-BB35AR-3.0-3.5	JC14857-15A	ACENAPHTHYLENE	U	3320	3320	43		
135-BB35AR-3.0-3.5	JC14857-15A	ACETOPHENONE	U	109J	109	220	Qualify	2
135-BB35AR-3.0-3.5	JC14857-15A	ANTHRACENE	U	5570	5570	860		
135-BB35AR-3.0-3.5	JC14857-15A	BENZALDEHYDE	U	187J	187	220	Qualify	2
135-BB35AR-3.0-3.5	JC14857-15A	BENZO(A)ANTHRACENE	U	19000	19000	860		
135-BB35AR-3.0-3.5	JC14857-15A	BENZO(A)PYRENE	U	21000	21000	860		
135-BB35AR-3.0-3.5	JC14857-15A	BENZO(B)FLUORANTHENE	U	21700	21700	860		
135-BB35AR-3.0-3.5	JC14857-15A	BENZO(G,H,I)PERYLENE	U	17900	17900	860		
135-BB35AR-3.0-3.5	JC14857-15A	BENZO(K)FLUORANTHENE	U	3790	3790	43		
135-BB35AR-3.0-3.5	JC14857-15A	CARBAZOLE	U	1540	1540	86		
135-BB35AR-3.0-3.5	JC14857-15A	CHRYSENE	U	18800	18800	860		
135-BB35AR-3.0-3.5	JC14857-15A	DIBENZO(A,H)ANTHRACENE	U	4250	4250	43		
135-BB35AR-3.0-3.5	JC14857-15A	DIBENZOFURAN	U	620	620	86		
135-BB35AR-3.0-3.5	JC14857-15A	FLUORANTHENE	U	39300	39300	860		

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135-BB35AR-3.0-3.5	JC14857-15A	FLUORENE	U	969	969	43		
135-BB35AR-3.0-3.5	JC14857-15A	INDENO(1,2,3-CD)PYRENE	U	15400	15400	860		
135-BB35AR-3.0-3.5	JC14857-15A	NAPHTHALENE	U	1290	1290	43		
135-BB35AR-3.0-3.5	JC14857-15A	PHENANTHRENE	U	21400	21400	860		
135-BB35AR-3.0-3.5	JC14857-15A	PHENOL	U	126	126	86		
135-BB35AR-3.0-3.5	JC14857-15A	PYRENE	U	37300	37300	860		
135-BB35AR-5.0-5.5	JC14857-16A	1-1'-BIPHENYL	U	37.9J	37.9	90	Qualify	2
135-BB35AR-5.0-5.5	JC14857-16A	2-METHYLNAPHTHALENE	U	65.5J	65.5	90	Qualify	2
135-BB35AR-5.0-5.5	JC14857-16A	ACENAPHTHENE	U	84.2	84.2	45		
135-BB35AR-5.0-5.5	JC14857-16A	ACENAPHTHYLENE	U	103	103	45		
135-BB35AR-5.0-5.5	JC14857-16A	ANTHRACENE	U	362	362	45		
135-BB35AR-5.0-5.5	JC14857-16A	BENZO(A)ANTHRACENE	U	1080	1080	45		
135-BB35AR-5.0-5.5	JC14857-16A	BENZO(A)PYRENE	U	1060	1060	45		
135-BB35AR-5.0-5.5	JC14857-16A	BENZO(B)FLUORANTHENE	U	1410	1410	45		
135-BB35AR-5.0-5.5	JC14857-16A	BENZO(G,H,I)PERYLENE	U	844	844	45		
135-BB35AR-5.0-5.5	JC14857-16A	BENZO(K)FLUORANTHENE	U	392	392	45		
135-BB35AR-5.0-5.5	JC14857-16A	CARBAZOLE	U	115	115	90		
135-BB35AR-5.0-5.5	JC14857-16A	CHRYSENE	U	1180	1180	45		
135-BB35AR-5.0-5.5	JC14857-16A	DIBENZO(A,H)ANTHRACENE	U	245	245	45		
135-BB35AR-5.0-5.5	JC14857-16A	DIBENZOFURAN	U	105	105	90		
135-BB35AR-5.0-5.5	JC14857-16A	FLUORANTHENE	U	1970	1970	45		
135-BB35AR-5.0-5.5	JC14857-16A	FLUORENE	U	102	102	45		
135-BB35AR-5.0-5.5	JC14857-16A	INDENO(1,2,3-CD)PYRENE	U	752	752	45		
135-BB35AR-5.0-5.5	JC14857-16A	NAPHTHALENE	U	173	173	45		
135-BB35AR-5.0-5.5	JC14857-16A	PHENANTHRENE	U	1230	1230	45		

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135-BB35AR-5.0-5.5	JC14857-16A	PYRENE	U	1870	1870	45		
135-BB35AR-7.0-7.5	JC14857-17A	BENZO(A)ANTHRACENE	U	33.3J	33.3	50	Qualify	2
135-BB35AR-7.0-7.5	JC14857-17A	BENZO(A)PYRENE	U	22.8J	22.8	50	Qualify	2
135-BB35AR-7.0-7.5	JC14857-17A	BENZO(B)FLUORANTHENE	U	32.2J	32.2	50	Qualify	2
135-BB35AR-7.0-7.5	JC14857-17A	BENZO(K)FLUORANTHENE	U	20.0J	20.0	50	Qualify	2
135-BB35AR-7.0-7.5	JC14857-17A	CHRYSENE	U	31.7J	31.7	50	Qualify	2
135-BB35AR-7.0-7.5	JC14857-17A	FLUORANTHENE	U	54.5	54.5	50		
135-BB35AR-7.0-7.5	JC14857-17A	PHENANTHRENE	U	46.1J	46.1	50	Qualify	2
135-BB35AR-7.0-7.5	JC14857-17A	PYRENE	U	60.1	60.1	50		
135-BB35AR-7.0-7.5X	JC14857-18A	BENZO(A)ANTHRACENE	U	22.8J	22.8	41	Qualify	2
135-BB35AR-7.0-7.5X	JC14857-18A	BENZO(A)PYRENE	U	17.9J	17.9	41	Qualify	2
135-BB35AR-7.0-7.5X	JC14857-18A	BENZO(B)FLUORANTHENE	U	18.5J	18.5	41	Qualify	2
135-BB35AR-7.0-7.5X	JC14857-18A	CHRYSENE	U	31.0J	31.0	41	Qualify	2
135-BB35AR-7.0-7.5X	JC14857-18A	FLUORANTHENE	U	35.6J	35.6	41	Qualify	2
135-BB35AR-7.0-7.5X	JC14857-18A	PHENANTHRENE	U	27.4J	27.4	41	Qualify	2
135-BB35AR-7.0-7.5X	JC14857-18A	PYRENE	U	40.7J	40.7	41	Qualify	2
135-BB35AR-9.0-9.5	JC14857-19A	2-METHYLNAPHTHALENE	U	24.7J	24.7	77	Qualify	2
135-BB35AR-9.0-9.5	JC14857-19A	ACENAPHTHENE	U	48.1	48.1	38		
135-BB35AR-9.0-9.5	JC14857-19A	ACENAPHTHYLENE	U	158	158	38		
135-BB35AR-9.0-9.5	JC14857-19A	ANTHRACENE	U	273	273	38		
135-BB35AR-9.0-9.5	JC14857-19A	BENZO(A)ANTHRACENE	U	713	713	38		
135-BB35AR-9.0-9.5	JC14857-19A	BENZO(A)PYRENE	U	639	639	38		
135-BB35AR-9.0-9.5	JC14857-19A	BENZO(B)FLUORANTHENE	U	721	721	38		
135-BB35AR-9.0-9.5	JC14857-19A	BENZO(G,H,I)PERYLENE	U	438	438	38		
135-BB35AR-9.0-9.5	JC14857-19A	BENZO(K)FLUORANTHENE	U	287	287	38		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-BB35AR-9.0-9.5	JC14857-19A	CARBAZOLE	U	136	136	77		
135-BB35AR-9.0-9.5	JC14857-19A	CHRYSENE	U	696	696	38		
135-BB35AR-9.0-9.5	JC14857-19A	DIBENZO(A,H)ANTHRACENE	U	100	100	38		
135-BB35AR-9.0-9.5	JC14857-19A	DIBENZOFURAN	U	134	134	77		
135-BB35AR-9.0-9.5	JC14857-19A	FLUORANTHENE	U	1910	1910	38		
135-BB35AR-9.0-9.5	JC14857-19A	FLUORENE	U	93.1	93.1	38		
135-BB35AR-9.0-9.5	JC14857-19A	INDENO(1,2,3-CD)PYRENE	U	458	458	38		
135-BB35AR-9.0-9.5	JC14857-19A	NAPHTHALENE	U	65.8	65.8	38		
135-BB35AR-9.0-9.5	JC14857-19A	PHENANTHRENE	U	1730	1730	38		
135-BB35AR-9.0-9.5	JC14857-19A	PYRENE	U	1790	1790	38		
135-BB36A-1.5-2.0	JC14857-20A	1-1'-BIPHENYL	U	2560	2560	300		
135-BB36A-1.5-2.0	JC14857-20A	2,4-DIMETHYLPHENOL	U	605J	605	750	Qualify	2
135-BB36A-1.5-2.0	JC14857-20A	2-METHYLNAPHTHALENE	U	5620	5620	300		
135-BB36A-1.5-2.0	JC14857-20A	3+4-METHYLPHENOL	U	1660	1660	300		
135-BB36A-1.5-2.0	JC14857-20A	ACENAPHTHENE	U	7730	7730	150		
135-BB36A-1.5-2.0	JC14857-20A	ACENAPHTHYLENE	U	33800	33800	12000	Qualify	4
135-BB36A-1.5-2.0	JC14857-20A	ACETOPHENONE	U	277J	277	750	Qualify	2
135-BB36A-1.5-2.0	JC14857-20A	ANTHRACENE	U	49700	49700	12000	Qualify	4
135-BB36A-1.5-2.0	JC14857-20A	BENZO(A)ANTHRACENE	U	131000	131000	12000	Qualify	4
135-BB36A-1.5-2.0	JC14857-20A	BENZO(A)PYRENE	U	138000	138000	12000	Qualify	4
135-BB36A-1.5-2.0	JC14857-20A	BENZO(B)FLUORANTHENE	U	146000	146000	12000	Qualify	4
135-BB36A-1.5-2.0	JC14857-20A	BENZO(G,H,I)PERYLENE	U	87000	87000	12000	Qualify	4
135-BB36A-1.5-2.0	JC14857-20A	BENZO(K)FLUORANTHENE	U	50500	50500	12000	Qualify	4
135-BB36A-1.5-2.0	JC14857-20A	CARBAZOLE	U	11600	11600	300		
135-BB36A-1.5-2.0	JC14857-20A	CHRYSENE	U	124000	124000	12000	Qualify	4

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135-BB36A-1.5-2.0	JC14857-20A	DIBENZO(A,H)ANTHRACENE	U	17900	17900	12000	Qualify	4
135-BB36A-1.5-2.0	JC14857-20A	DIBENZOFURAN	U	13700	13700	300		
135-BB36A-1.5-2.0	JC14857-20A	FLUORANTHENE	U	350000	350000	12000	Qualify	4
135-BB36A-1.5-2.0	JC14857-20A	FLUORENE	U	14600	14600	150		
135-BB36A-1.5-2.0	JC14857-20A	INDENO(1,2,3-CD)PYRENE	U	90000	90000	12000	Qualify	4
135-BB36A-1.5-2.0	JC14857-20A	NAPHTHALENE	U	24100	24100	12000	Qualify	4
135-BB36A-1.5-2.0	JC14857-20A	PHENANTHRENE	U	226000	226000	12000	Qualify	4
135-BB36A-1.5-2.0	JC14857-20A	PHENOL	U	1250	1250	300		
135-BB36A-1.5-2.0	JC14857-20A	PYRENE	U	328000	328000	12000	Qualify	4
135-BB36A-11.5-12.0	JC14857-21A	FLUORANTHENE	U	21.1J	21.1	37	Qualify	2
135-BB36A-11.5-12.0	JC14857-21A	PHENANTHRENE	U	18.5J	18.5	37	Qualify	2
135-BB36A-11.5-12.0	JC14857-21A	PYRENE	U	19.8J	19.8	37	Qualify	2
135-BB36A-13.5-14.0	JC14857-22A	3+4-METHYLPHENOL	U	57.9J	57.9	79	Qualify	2
135-BB36A-13.5-14.0	JC14857-22A	FLUORANTHENE	U	18.4J	18.4	40	Qualify	2
135-BB36A-13.5-14.0	JC14857-22A	PHENANTHRENE	U	24.2J	24.2	40	Qualify	2
135-BB36A-14.0-14.5	JC14857-23A	1,2,4,5-TETRACHLOROBENZENE	U	U	U	410	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	1,4-DIOXANE	U	U	U	83	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	1-1'-BIPHENYL	U	U	U	170	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	2,2'-OXYBIS(1-CHLOROPROPANE)	U	U	U	170	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	2,3,4,6-Tetrachlorophenol	U	U	U	410	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	2,4,5-TRICHLOROPHENOL	U	U	U	410	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	2,4,6-TRICHLOROPHENOL	U	U	U	410	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	2,4-DICHLOROPHENOL	U	U	U	410	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	2,4-DIMETHYLPHENOL	U	U	U	410	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	2,4-DINITROPHENOL	U	U		410	Qualify	1,7

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135-BB36A-14.0-14.5	JC14857-23A	2,4-DINITROTOLUENE	U	U		83	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	2,6-DINITROTOLUENE	U	U		83	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	2-CHLORONAPHTHALENE	U	U		170	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	2-CHLOROPHENOL	U	U		170	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	2-METHYLNAPHTHALENE	U	U		170	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	2-METHYLPHENOL	U	U		170	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	2-NITROANILINE	U	U		410	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	2-NITROPHENOL	U	U		410	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	3,3'-DICHLOROBENZIDINE	U	U		170	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	3,5,5-TRIMETHYL-2-CYCLOHEXENE-1-ONE	U	U		170	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	3+4-METHYLPHENOL	U	104J	104	170	Qualify	1,2,7
135-BB36A-14.0-14.5	JC14857-23A	3-NITROANILINE	U	U		410	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	4,6-DINITRO-2-METHYLPHENOL	U	U		410	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	4-BROMOPHENYL PHENYL ETHER	U	U		170	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	4-CHLORO-3-METHYLPHENOL	U	U		410	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	4-CHLOROPHENYL PHENYL ETHER	U	U		170	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	4-NITROPHENOL	U	U		830	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	ACENAPHTHENE	U	U		83	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	ACENAPHTHYLENE	U	U		83	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	ACETOPHENONE	U	U		410	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	ANTHRACENE	U	U		83	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	ATRAZINE	U	U		170	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	BENZALDEHYDE	U	266J	266	410	Qualify	1,2,7

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135-BB36A-14.0-14.5	JC14857-23A	BENZO(A)ANTHRACENE	U	U	U	83	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	BENZO(A)PYRENE	U	U	U	83	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	BENZO(B)FLUORANTHENE	U	U	U	83	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	BENZO(G,H,I)PERYLENE	U	U	U	83	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	BENZO(K)FLUORANTHENE	U	U	U	83	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	BENZYL BUTYL PHTHALATE	U	U	U	170	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	BIS(-2-CHLOROETHOXY)METHANE	U	U	U	170	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	BIS(2-CHLOROETHYL)ETHER	U	U	U	170	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	BIS(2-ETHYLHEXYL)PHTHALATE	U	U	U	170	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	CAPROLACTAM	U	U	U	170	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	CARBAZOLE	U	U	U	170	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	CHRYSENE	U	U	U	83	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	DIBENZO(A,H)ANTHRACENE	U	U	U	83	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	DIBENZOFURAN	U	U	U	170	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	DIETHYL PHTHALATE	U	U	U	170	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	DIMETHYL PHTHALATE	U	U	U	170	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	DI-N-BUTYLPHTHALATE	U	U	U	170	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	DI-N-OCTYL PHTHALATE	U	U	U	170	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	FLUORANTHENE	U	U	U	83	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	FLUORENE	U	55.0J	55.0	83	Qualify	1,2,7
135-BB36A-14.0-14.5	JC14857-23A	HEXACHLORO-1,3-BUTADIENE	U	U	U	83	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	HEXACHLOROBENZENE	U	U	U	170	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	HEXACHLOROCYCLOPENTADIENE	U	U	U	830	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	HEXACHLOROETHANE	U	U	U	410	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	INDENO(1,2,3-CD)PYRENE	U	U	U	83	Qualify	1,7

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135-BB36A-14.0-14.5	JC14857-23A	NAPHTHALENE	U	208	208	83	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	NITROBENZENE	U	U	U	170	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	N-NITROSO-DI-N-PROPYLAMINE	U	U	U	170	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	N-NITROSODIPHENYLAMINE	U	U	U	410	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	P-CHLOROANILINE	U	U	U	410	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	PENTACHLOROPHENOL	U	U	U	410	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	PHENANTHRENE	U	75.8J	75.8	83	Qualify	1,2,7
135-BB36A-14.0-14.5	JC14857-23A	PHENOL	U	131J	131	170	Qualify	1,2,7
135-BB36A-14.0-14.5	JC14857-23A	P-NITROANILINE	U	U	U	410	Qualify	1,7
135-BB36A-14.0-14.5	JC14857-23A	PYRENE	U	U	U	83	Qualify	1,7
135-BB36A-3.5-4.0	JC14857-24A	1-1'-BIPHENYL	U	21.0J	21.0	72	Qualify	2
135-BB36A-3.5-4.0	JC14857-24A	2-METHYLNAPHTHALENE	U	42.2J	42.2	72	Qualify	2
135-BB36A-3.5-4.0	JC14857-24A	3+4-METHYLPHENOL	U	79.5	79.5	72		
135-BB36A-3.5-4.0	JC14857-24A	ACENAPHTHENE	U	48.3	48.3	36		
135-BB36A-3.5-4.0	JC14857-24A	ACENAPHTHYLENE	U	194	194	36		
135-BB36A-3.5-4.0	JC14857-24A	ANTHRACENE	U	386	386	36		
135-BB36A-3.5-4.0	JC14857-24A	BENZO(A)ANTHRACENE	U	1270	1270	36		
135-BB36A-3.5-4.0	JC14857-24A	BENZO(A)PYRENE	U	3590	3590	180		
135-BB36A-3.5-4.0	JC14857-24A	BENZO(B)FLUORANTHENE	U	3540	3540	180		
135-BB36A-3.5-4.0	JC14857-24A	BENZO(G,H,I)PERYLENE	U	2490	2490	36		
135-BB36A-3.5-4.0	JC14857-24A	BENZO(K)FLUORANTHENE	U	1120	1120	36		
135-BB36A-3.5-4.0	JC14857-24A	CARBAZOLE	U	83.6	83.6	72		
135-BB36A-3.5-4.0	JC14857-24A	CHRYSENE	U	1380	1380	36		
135-BB36A-3.5-4.0	JC14857-24A	DIBENZO(A,H)ANTHRACENE	U	521	521	36		
135-BB36A-3.5-4.0	JC14857-24A	DIBENZOFURAN	U	54.0J	54.0	72	Qualify	2

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135-BB36A-3.5-4.0	JC14857-24A	FLUORANTHENE	U	2050	2050	36		
135-BB36A-3.5-4.0	JC14857-24A	FLUORENE	U	65.1	65.1	36		
135-BB36A-3.5-4.0	JC14857-24A	INDENO(1,2,3-CD)PYRENE	U	2690	2690	36		
135-BB36A-3.5-4.0	JC14857-24A	NAPHTHALENE	U	240	240	36		
135-BB36A-3.5-4.0	JC14857-24A	PHENANTHRENE	U	802	802	36		
135-BB36A-3.5-4.0	JC14857-24A	PYRENE	U	2200	2200	36		
135-BB36A-5.5-6.0	JC14857-25A	FLUORANTHENE	U	14.6J	14.6	36	Qualify	2
135-CC28A-10.0-10.5	JC14857-28A	2-METHYLNAPHTHALENE	U	120	120	120		
135-CC28A-10.0-10.5	JC14857-28A	3+4-METHYLPHENOL	U	960	960	120	Qualify	3
135-CC28A-10.0-10.5	JC14857-28A	ACENAPHTHENE	U	74.7	74.7	61		
135-CC28A-10.0-10.5	JC14857-28A	ANTHRACENE	U	81.3	81.3	61		
135-CC28A-10.0-10.5	JC14857-28A	BENZALDEHYDE	U	157J	157	310	Qualify	2
135-CC28A-10.0-10.5	JC14857-28A	BENZO(A)ANTHRACENE	U	122	122	61	Qualify	3
135-CC28A-10.0-10.5	JC14857-28A	BENZO(A)PYRENE	U	83.0	83.0	61	Qualify	3
135-CC28A-10.0-10.5	JC14857-28A	BENZO(B)FLUORANTHENE	U	93.8	93.8	61		
135-CC28A-10.0-10.5	JC14857-28A	BENZO(G,H,I)PERYLENE	U	52.2J	52.2	61	Qualify	2
135-CC28A-10.0-10.5	JC14857-28A	BENZO(K)FLUORANTHENE	U	29.8J	29.8	61	Qualify	2
135-CC28A-10.0-10.5	JC14857-28A	CHRYSENE	U	173	173	61	Qualify	3
135-CC28A-10.0-10.5	JC14857-28A	FLUORANTHENE	U	198	198	61	Qualify	3
135-CC28A-10.0-10.5	JC14857-28A	FLUORENE	U	108	108	61		
135-CC28A-10.0-10.5	JC14857-28A	INDENO(1,2,3-CD)PYRENE	U	43.0J	43.0	61	Qualify	2
135-CC28A-10.0-10.5	JC14857-28A	NAPHTHALENE	U	403	403	61		
135-CC28A-10.0-10.5	JC14857-28A	PHENANTHRENE	U	459	459	61	Qualify	3
135-CC28A-10.0-10.5	JC14857-28A	PYRENE	U	339	339	61	Qualify	3
135-CC28A-10.0-10.5X	JC14857-29A	2-METHYLNAPHTHALENE	U	127	127	110		

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135-CC28A-10.0-10.5X	JC14857-29A	3+4-METHYLPHENOL	U	1460	1460	110	Qualify	3
135-CC28A-10.0-10.5X	JC14857-29A	ACENAPHTHYLENE	U	37.1J	37.1	54	Qualify	2
135-CC28A-10.0-10.5X	JC14857-29A	ACETOPHENONE	U	84.5J	84.5	270	Qualify	2
135-CC28A-10.0-10.5X	JC14857-29A	ANTHRACENE	U	45.6J	45.6	54	Qualify	2
135-CC28A-10.0-10.5X	JC14857-29A	BENZALDEHYDE	U	210J	210	270	Qualify	2
135-CC28A-10.0-10.5X	JC14857-29A	BENZO(A)ANTHRACENE	U	41.4J	41.4	54	Qualify	2,3
135-CC28A-10.0-10.5X	JC14857-29A	BENZO(A)PYRENE	U	24.2J	24.2	54	Qualify	2,3
135-CC28A-10.0-10.5X	JC14857-29A	BENZO(B)FLUORANTHENE	U	40.0J	40.0	54	Qualify	2
135-CC28A-10.0-10.5X	JC14857-29A	CARBAZOLE	U	21.5J	21.5	110	Qualify	2
135-CC28A-10.0-10.5X	JC14857-29A	CHRYSENE	U	53.3J	53.3	54	Qualify	2,3
135-CC28A-10.0-10.5X	JC14857-29A	DIBENZOFURAN	U	35.7J	35.7	110	Qualify	2
135-CC28A-10.0-10.5X	JC14857-29A	FLUORANTHENE	U	111	111	54	Qualify	3
135-CC28A-10.0-10.5X	JC14857-29A	FLUORENE	U	65.3	65.3	54		
135-CC28A-10.0-10.5X	JC14857-29A	NAPHTHALENE	U	510	510	54		
135-CC28A-10.0-10.5X	JC14857-29A	PHENANTHRENE	U	231	231	54	Qualify	3
135-CC28A-10.0-10.5X	JC14857-29A	PYRENE	U	131	131	54	Qualify	3
135-CC28A-12.0-12.5	JC14857-30A	1-1'-BIPHENYL	U	26.4J	26.4	92	Qualify	2
135-CC28A-12.0-12.5	JC14857-30A	2,4-DINITROPHENOL	U	U	R	230	Reject	6
135-CC28A-12.0-12.5	JC14857-30A	2-METHYLNAPHTHALENE	U	58.8J	58.8	92	Qualify	2
135-CC28A-12.0-12.5	JC14857-30A	2-NITROPHENOL	U	U	U	230	Qualify	8,9
135-CC28A-12.0-12.5	JC14857-30A	3+4-METHYLPHENOL	U	1460	1460	92		
135-CC28A-12.0-12.5	JC14857-30A	4,6-DINITRO-2-METHYLPHENOL	U	U	R	230	Reject	6
135-CC28A-12.0-12.5	JC14857-30A	ACENAPHTHYLENE	U	18.4J	18.4	46	Qualify	2
135-CC28A-12.0-12.5	JC14857-30A	ACETOPHENONE	U	54.1J	54.1	230	Qualify	2
135-CC28A-12.0-12.5	JC14857-30A	ANTHRACENE	U	25.8J	25.8	46	Qualify	2

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-CC28A-12.0-12.5	JC14857-30A	BENZALDEHYDE	U	188J	188	230	Qualify	2
135-CC28A-12.0-12.5	JC14857-30A	BENZO(A)ANTHRACENE	U	35.1J	35.1	46	Qualify	2
135-CC28A-12.0-12.5	JC14857-30A	BENZO(A)PYRENE	U	24.2J	24.2	46	Qualify	2
135-CC28A-12.0-12.5	JC14857-30A	BENZO(B)FLUORANTHENE	U	27.5J	27.5	46	Qualify	2
135-CC28A-12.0-12.5	JC14857-30A	BENZO(G,H,I)PERYLENE	U	18.5J	18.5	46	Qualify	2
135-CC28A-12.0-12.5	JC14857-30A	CHRYSENE	U	40.9J	40.9	46	Qualify	2
135-CC28A-12.0-12.5	JC14857-30A	FLUORANTHENE	U	65.2	65.2	46		
135-CC28A-12.0-12.5	JC14857-30A	FLUORENE	U	19.6J	19.6	46	Qualify	2
135-CC28A-12.0-12.5	JC14857-30A	HEXACHLOROCYCLOPENTADIENE	U	U		460	Reject	6
135-CC28A-12.0-12.5	JC14857-30A	HEXACHLOROETHANE	U	U		230	Reject	6,9
135-CC28A-12.0-12.5	JC14857-30A	NAPHTHALENE	U	291	291	46		
135-CC28A-12.0-12.5	JC14857-30A	PHENANTHRENE	U	97.9	97.9	46		
135-CC28A-12.0-12.5	JC14857-30A	PHENOL	U	61.6J	61.6	92	Qualify	2
135-CC28A-12.0-12.5	JC14857-30A	PYRENE	U	73.7	73.7	46		
135-CC28A-14.0-14.5	JC14857-31A	1-1'-BIPHENYL	U	119	119	84		
135-CC28A-14.0-14.5	JC14857-31A	2-METHYLNAPHTHALENE	U	373	373	84		
135-CC28A-14.0-14.5	JC14857-31A	2-METHYLPHENOL	U	84.5	84.5	84		
135-CC28A-14.0-14.5	JC14857-31A	3+4-METHYLPHENOL	U	6650	6650	840		
135-CC28A-14.0-14.5	JC14857-31A	ACENAPHTHENE	U	135	135	42		
135-CC28A-14.0-14.5	JC14857-31A	ACENAPHTHYLENE	U	29.5J	29.5	42	Qualify	2
135-CC28A-14.0-14.5	JC14857-31A	ANTHRACENE	U	121	121	42		
135-CC28A-14.0-14.5	JC14857-31A	BENZALDEHYDE	U	287	287	210		
135-CC28A-14.0-14.5	JC14857-31A	BENZO(A)ANTHRACENE	U	214	214	42		
135-CC28A-14.0-14.5	JC14857-31A	BENZO(A)PYRENE	U	120	120	42		
135-CC28A-14.0-14.5	JC14857-31A	BENZO(B)FLUORANTHENE	U	162	162	42		

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135-CC28A-14.0-14.5	JC14857-31A	BENZO(G,H,I)PERYLENE	U	78.6	78.6	42		
135-CC28A-14.0-14.5	JC14857-31A	BENZO(K)FLUORANTHENE	U	53.9	53.9	42		
135-CC28A-14.0-14.5	JC14857-31A	CARBAZOLE	U	37.8J	37.8	84	Qualify	2
135-CC28A-14.0-14.5	JC14857-31A	CHRYSENE	U	259	259	42		
135-CC28A-14.0-14.5	JC14857-31A	DIBENZOFURAN	U	145	145	84		
135-CC28A-14.0-14.5	JC14857-31A	FLUORANTHENE	U	380	380	42		
135-CC28A-14.0-14.5	JC14857-31A	FLUORENE	U	120	120	42		
135-CC28A-14.0-14.5	JC14857-31A	INDENO(1,2,3-CD)PYRENE	U	80.0	80.0	42		
135-CC28A-14.0-14.5	JC14857-31A	NAPHTHALENE	U	4310	4310	420		
135-CC28A-14.0-14.5	JC14857-31A	PHENANTHRENE	U	497	497	42		
135-CC28A-14.0-14.5	JC14857-31A	PHENOL	U	803	803	84		
135-CC28A-14.0-14.5	JC14857-31A	PYRENE	U	512	512	42		
135-CC28A-16.0-16.5	JC14857-32A	1-1'-BIPHENYL	U	127	127	120		
135-CC28A-16.0-16.5	JC14857-32A	2-METHYLNAPHTHALENE	U	513	513	120		
135-CC28A-16.0-16.5	JC14857-32A	2-METHYLPHENOL	U	122	122	120		
135-CC28A-16.0-16.5	JC14857-32A	3+4-METHYLPHENOL	U	5890	5890	120		
135-CC28A-16.0-16.5	JC14857-32A	ACENAPHTHENE	U	344	344	61		
135-CC28A-16.0-16.5	JC14857-32A	ACENAPHTHYLENE	U	92.4	92.4	61		
135-CC28A-16.0-16.5	JC14857-32A	ANTHRACENE	U	323	323	61		
135-CC28A-16.0-16.5	JC14857-32A	BENZALDEHYDE	U	398	398	300		
135-CC28A-16.0-16.5	JC14857-32A	BENZO(A)ANTHRACENE	U	321	321	61		
135-CC28A-16.0-16.5	JC14857-32A	BENZO(A)PYRENE	U	191	191	61		
135-CC28A-16.0-16.5	JC14857-32A	BENZO(B)FLUORANTHENE	U	301	301	61		
135-CC28A-16.0-16.5	JC14857-32A	BENZO(G,H,I)PERYLENE	U	124	124	61		
135-CC28A-16.0-16.5	JC14857-32A	BENZO(K)FLUORANTHENE	U	95.1	95.1	61		

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135-CC28A-16.0-16.5	JC14857-32A	CARBAZOLE	U	200	200	120		
135-CC28A-16.0-16.5	JC14857-32A	CHRYSENE	U	449	449	61		
135-CC28A-16.0-16.5	JC14857-32A	DIBENZO(A,H)ANTHRACENE	U	41.9J	41.9	61	Qualify	2
135-CC28A-16.0-16.5	JC14857-32A	DIBENZOFURAN	U	228	228	120		
135-CC28A-16.0-16.5	JC14857-32A	FLUORANTHENE	U	820	820	61		
135-CC28A-16.0-16.5	JC14857-32A	FLUORENE	U	375	375	61		
135-CC28A-16.0-16.5	JC14857-32A	INDENO(1,2,3-CD)PYRENE	U	113	113	61		
135-CC28A-16.0-16.5	JC14857-32A	NAPHTHALENE	U	17900	17900	300		
135-CC28A-16.0-16.5	JC14857-32A	PHENANTHRENE	U	1760	1760	61		
135-CC28A-16.0-16.5	JC14857-32A	PHENOL	U	530	530	120		
135-CC28A-16.0-16.5	JC14857-32A	PYRENE	U	1000	1000	61		
135-CC28A-18.0-18.5	JC14857-33A	1-1'-BIPHENYL	U	210	210	120		
135-CC28A-18.0-18.5	JC14857-33A	2-METHYLNAPHTHALENE	U	682	682	120		
135-CC28A-18.0-18.5	JC14857-33A	2-METHYLPHENOL	U	132	132	120		
135-CC28A-18.0-18.5	JC14857-33A	3+4-METHYLPHENOL	U	6360	6360	580		
135-CC28A-18.0-18.5	JC14857-33A	ACENAPHTHENE	U	963	963	58		
135-CC28A-18.0-18.5	JC14857-33A	ACENAPHTHYLENE	U	133	133	58		
135-CC28A-18.0-18.5	JC14857-33A	ACETOPHENONE	U	219J	219	290	Qualify	2
135-CC28A-18.0-18.5	JC14857-33A	ANTHRACENE	U	1090	1090	58		
135-CC28A-18.0-18.5	JC14857-33A	BENZALDEHYDE	U	596	596	290		
135-CC28A-18.0-18.5	JC14857-33A	BENZO(A)ANTHRACENE	U	2720	2720	58		
135-CC28A-18.0-18.5	JC14857-33A	BENZO(A)PYRENE	U	2320	2320	58		
135-CC28A-18.0-18.5	JC14857-33A	BENZO(B)FLUORANTHENE	U	2870	2870	58		
135-CC28A-18.0-18.5	JC14857-33A	BENZO(G,H,I)PERYLENE	U	1350	1350	58		
135-CC28A-18.0-18.5	JC14857-33A	BENZO(K)FLUORANTHENE	U	776	776	58		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-CC28A-18.0-18.5	JC14857-33A	CARBAZOLE	U	408	408	120		
135-CC28A-18.0-18.5	JC14857-33A	CHRYSENE	U	3510	3510	58		
135-CC28A-18.0-18.5	JC14857-33A	DIBENZO(A,H)ANTHRACENE	U	331	331	58		
135-CC28A-18.0-18.5	JC14857-33A	DIBENZOFURAN	U	483	483	120		
135-CC28A-18.0-18.5	JC14857-33A	FLUORANTHENE	U	8340	8340	290		
135-CC28A-18.0-18.5	JC14857-33A	FLUORENE	U	1120	1120	58		
135-CC28A-18.0-18.5	JC14857-33A	INDENO(1,2,3-CD)PYRENE	U	1320	1320	58		
135-CC28A-18.0-18.5	JC14857-33A	NAPHTHALENE	U	9620	9620	290		
135-CC28A-18.0-18.5	JC14857-33A	PHENANTHRENE	U	12100	12100	290		
135-CC28A-18.0-18.5	JC14857-33A	PHENOL	U	1000	1000	120		
135-CC28A-18.0-18.5	JC14857-33A	PYRENE	U	10500	10500	290		
135-CC28A-18.5-19.0	JC14857-34A	1-1'-BIPHENYL	U	43.3J	43.3	98	Qualify	2
135-CC28A-18.5-19.0	JC14857-34A	2-METHYLNAPHTHALENE	U	144	144	98		
135-CC28A-18.5-19.0	JC14857-34A	3+4-METHYLPHENOL	U	483	483	98		
135-CC28A-18.5-19.0	JC14857-34A	ACENAPHTHENE	U	66.2	66.2	49		
135-CC28A-18.5-19.0	JC14857-34A	ACENAPHTHYLENE	U	60.1	60.1	49		
135-CC28A-18.5-19.0	JC14857-34A	ANTHRACENE	U	129	129	49		
135-CC28A-18.5-19.0	JC14857-34A	BENZALDEHYDE	U	159J	159	240	Qualify	2
135-CC28A-18.5-19.0	JC14857-34A	BENZO(A)ANTHRACENE	U	191	191	49		
135-CC28A-18.5-19.0	JC14857-34A	BENZO(A)PYRENE	U	159	159	49		
135-CC28A-18.5-19.0	JC14857-34A	BENZO(B)FLUORANTHENE	U	220	220	49		
135-CC28A-18.5-19.0	JC14857-34A	BENZO(G,H,I)PERYLENE	U	111	111	49		
135-CC28A-18.5-19.0	JC14857-34A	BENZO(K)FLUORANTHENE	U	60.6	60.6	49		
135-CC28A-18.5-19.0	JC14857-34A	CARBAZOLE	U	37.7J	37.7	98	Qualify	2
135-CC28A-18.5-19.0	JC14857-34A	CHRYSENE	U	214	214	49		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-CC28A-18.5-19.0	JC14857-34A	DIBENZO(A,H)ANTHRACENE	U	31.8J	31.8	49	Qualify	2
135-CC28A-18.5-19.0	JC14857-34A	DIBENZOFURAN	U	58.3J	58.3	98	Qualify	2
135-CC28A-18.5-19.0	JC14857-34A	FLUORANTHENE	U	406	406	49		
135-CC28A-18.5-19.0	JC14857-34A	FLUORENE	U	120	120	49		
135-CC28A-18.5-19.0	JC14857-34A	INDENO(1,2,3-CD)PYRENE	U	116	116	49		
135-CC28A-18.5-19.0	JC14857-34A	NAPHTHALENE	U	889	889	49		
135-CC28A-18.5-19.0	JC14857-34A	PHENANTHRENE	U	450	450	49		
135-CC28A-18.5-19.0	JC14857-34A	PYRENE	U	386	386	49		
135-CC28A-19.0-19.5	JC14857-35A	1,2,4,5-TETRACHLOROBENZENE	U	U	U	960	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	1,4-DIOXANE	U	U	U	190	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	1-1'-BIPHENYL	U	U	U	390	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	2,2'-OXYBIS(1-CHLOROPROPANE)	U	U	U	390	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	2,3,4,6-Tetrachlorophenol	U	U	U	960	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	2,4,5-TRICHLOROPHENOL	U	U	U	960	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	2,4,6-TRICHLOROPHENOL	U	U	U	960	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	2,4-DICHLOROPHENOL	U	U	U	960	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	2,4-DIMETHYLPHENOL	U	U	U	960	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	2,4-DINITROPHENOL	U	U	U	960	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	2,4-DINITROTOLUENE	U	U	U	190	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	2,6-DINITROTOLUENE	U	U	U	190	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	2-CHLORONAPHTHALENE	U	U	U	390	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	2-CHLOROPHENOL	U	U	U	390	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	2-METHYLNAPHTHALENE	U	U	U	390	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	2-METHYLPHENOL	U	U	U	390	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	2-NITROANILINE	U	U	U	960	Qualify	1

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135-CC28A-19.0-19.5	JC14857-35A	2-NITROPHENOL	U	U	U	960	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	3,3'-DICHLOROBENZIDINE	U	U	U	390	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	3,5,5-TRIMETHYL-2-CYCLOHEXENE-1-ONE	U	U	U	390	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	3+4-METHYLPHENOL	U	U	U	390	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	3-NITROANILINE	U	U	U	960	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	4,6-DINITRO-2-METHYLPHENOL	U	U	U	960	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	4-BROMOPHENYL PHENYL ETHER	U	U	U	390	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	4-CHLORO-3-METHYLPHENOL	U	U	U	960	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	4-CHLOROPHENYL PHENYL ETHER	U	U	U	390	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	4-NITROPHENOL	U	U	U	1900	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	ACENAPHTHENE	U	U	U	190	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	ACENAPHTHYLENE	U	U	U	190	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	ACETOPHENONE	U	U	U	960	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	ANTHRACENE	U	U	U	190	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	ATRAZINE	U	U	U	390	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	BENZALDEHYDE	U	U	U	960	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	BENZO(A)ANTHRACENE	U	U	U	190	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	BENZO(A)PYRENE	U	U	U	190	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	BENZO(B)FLUORANTHENE	U	U	U	190	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	BENZO(G,H,I)PERYLENE	U	U	U	190	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	BENZO(K)FLUORANTHENE	U	U	U	190	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	BENZYL BUTYL PHTHALATE	U	U	U	390	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	BIS(-2-CHLOROETHOXY)METHANE	U	U	U	390	Qualify	1

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135-CC28A-19.0-19.5	JC14857-35A	BIS(2-CHLOROETHYL)ETHER	U	U	U	390	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	BIS(2-ETHYLHEXYL)PHTHALATE	U	U	U	390	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	CAPROLACTAM	U	U	U	390	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	CARBAZOLE	U	U	U	390	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	CHRYSENE	U	U	U	190	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	DIBENZO(A,H)ANTHRACENE	U	U	U	190	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	DIBENZOFURAN	U	U	U	390	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	DIETHYL PHTHALATE	U	U	U	390	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	DIMETHYL PHTHALATE	U	U	U	390	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	DI-N-BUTYLPHTHALATE	U	U	U	390	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	DI-N-OCTYL PHTHALATE	U	U	U	390	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	FLUORANTHENE	U	U	U	190	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	FLUORENE	U	U	U	190	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	HEXACHLORO-1,3-BUTADIENE	U	U	U	190	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	HEXACHLOROBENZENE	U	U	U	390	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	HEXACHLOROCYCLOPENTADIENE	U	U	U	1900	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	HEXACHLOROETHANE	U	U	U	960	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	INDENO(1,2,3-CD)PYRENE	U	U	U	190	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	NAPHTHALENE	U	U	U	190	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	NITROBENZENE	U	U	U	390	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	N-NITROSO-DI-N-PROPYLAMINE	U	U	U	390	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	N-NITROSODIPHENYLAMINE	U	U	U	960	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	P-CHLOROANILINE	U	U	U	960	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	PENTACHLOROPHENOL	U	U	U	960	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	PHENANTHRENE	U	114J	114	190	Qualify	1,2

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-CC28A-19.0-19.5	JC14857-35A	PHENOL	U	U	U	390	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	P-NITROANILINE	U	U	U	960	Qualify	1
135-CC28A-19.0-19.5	JC14857-35A	PYRENE	U	U	U	190	Qualify	1
135-CC31A-10.0-10.5	JC14857-1A	2-METHYLNAPHTHALENE	U	2280	2280	100		
135-CC31A-10.0-10.5	JC14857-1A	3+4-METHYLPHENOL	U	393	393	100		
135-CC31A-10.0-10.5	JC14857-1A	ACENAPHTHENE	U	1080	1080	50		
135-CC31A-10.0-10.5	JC14857-1A	ANTHRACENE	U	1230	1230	50		
135-CC31A-10.0-10.5	JC14857-1A	BENZO(A)ANTHRACENE	U	2410	2410	50		
135-CC31A-10.0-10.5	JC14857-1A	BENZO(A)PYRENE	U	1900	1900	50		
135-CC31A-10.0-10.5	JC14857-1A	BENZO(B)FLUORANTHENE	U	1900	1900	50		
135-CC31A-10.0-10.5	JC14857-1A	BENZO(G,H,I)PERYLENE	U	924	924	50		
135-CC31A-10.0-10.5	JC14857-1A	BENZO(K)FLUORANTHENE	U	588	588	50		
135-CC31A-10.0-10.5	JC14857-1A	CHRYSENE	U	2940	2940	50		
135-CC31A-10.0-10.5	JC14857-1A	DIBENZO(A,H)ANTHRACENE	U	244	244	50		
135-CC31A-10.0-10.5	JC14857-1A	FLUORANTHENE	U	4150	4150	50		
135-CC31A-10.0-10.5	JC14857-1A	FLUORENE	U	1190	1190	50		
135-CC31A-10.0-10.5	JC14857-1A	INDENO(1,2,3-CD)PYRENE	U	709	709	50		
135-CC31A-10.0-10.5	JC14857-1A	NAPHTHALENE	U	861	861	50		
135-CC31A-10.0-10.5	JC14857-1A	PHENANTHRENE	U	5490	5490	200		
135-CC31A-10.0-10.5	JC14857-1A	PYRENE	U	4690	4690	200		
135-CC31A-12.0-12.5	JC14857-2A	1-1'-BIPHENYL	U	35.5J	35.5	90	Qualify	2
135-CC31A-12.0-12.5	JC14857-2A	2-METHYLNAPHTHALENE	U	667	667	90		
135-CC31A-12.0-12.5	JC14857-2A	3+4-METHYLPHENOL	U	255	255	90		
135-CC31A-12.0-12.5	JC14857-2A	ACENAPHTHENE	U	656	656	45		
135-CC31A-12.0-12.5	JC14857-2A	ANTHRACENE	U	158	158	45		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-CC31A-12.0-12.5	JC14857-2A	BENZO(A)ANTHRACENE	U	105	105	45		
135-CC31A-12.0-12.5	JC14857-2A	BENZO(A)PYRENE	U	46.2	46.2	45		
135-CC31A-12.0-12.5	JC14857-2A	BENZO(B)FLUORANTHENE	U	65.0	65.0	45		
135-CC31A-12.0-12.5	JC14857-2A	BENZO(G,H,I)PERYLENE	U	23.2J	23.2	45	Qualify	2
135-CC31A-12.0-12.5	JC14857-2A	CARBAZOLE	U	59.8J	59.8	90	Qualify	2
135-CC31A-12.0-12.5	JC14857-2A	CHRYSENE	U	138	138	45		
135-CC31A-12.0-12.5	JC14857-2A	DIBENZOFURAN	U	188	188	90		
135-CC31A-12.0-12.5	JC14857-2A	FLUORANTHENE	U	226	226	45		
135-CC31A-12.0-12.5	JC14857-2A	FLUORENE	U	446	446	45		
135-CC31A-12.0-12.5	JC14857-2A	INDENO(1,2,3-CD)PYRENE	U	23.9J	23.9	45	Qualify	2
135-CC31A-12.0-12.5	JC14857-2A	NAPHTHALENE	U	5560	5560	180		
135-CC31A-12.0-12.5	JC14857-2A	PHENANTHRENE	U	824	824	45		
135-CC31A-12.0-12.5	JC14857-2A	PYRENE	U	383	383	45		
135-CC31A-14.0-14.5	JC14857-3A	1,2,4,5-TETRACHLOROBENZENE	U	U	U	340	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	1,4-DIOXANE	U	U	U	69	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	1-1'-BIPHENYL	U	234	234	140	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	2,2'-OXYBIS(1-CHLOROPROPANE)	U	U	U	140	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	2,3,4,6-Tetrachlorophenol	U	U	U	340	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	2,4,5-TRICHLOROPHENOL	U	U	U	340	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	2,4,6-TRICHLOROPHENOL	U	U	U	340	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	2,4-DICHLOROPHENOL	U	U	U	340	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	2,4-DIMETHYLPHENOL	U	U	U	340	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	2,4-DINITROPHENOL	U	U	U	340	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	2,4-DINITROTOLUENE	U	U	U	69	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	2,6-DINITROTOLUENE	U	U	U	69	Qualify	1

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-CC31A-14.0-14.5	JC14857-3A	2-CHLORONAPHTHALENE	U	U	U	140	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	2-CHLOROPHENOL	U	U	U	140	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	2-METHYLNAPHTHALENE	U	2000	2000	140	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	2-METHYLPHENOL	U	U	U	140	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	2-NITROANILINE	U	U	U	340	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	2-NITROPHENOL	U	U	U	340	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	3,3'-DICHLOROBENZIDINE	U	U	U	140	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	3,5,5-TRIMETHYL-2-CYCLOHEXENE-1-ONE	U	U	U	140	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	3+4-METHYLPHENOL	U	U	U	140	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	3-NITROANILINE	U	U	U	340	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	4,6-DINITRO-2-METHYLPHENOL	U	U	U	340	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	4-BROMOPHENYL PHENYL ETHER	U	U	U	140	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	4-CHLORO-3-METHYLPHENOL	U	U	U	340	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	4-CHLOROPHENYL PHENYL ETHER	U	U	U	140	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	4-NITROPHENOL	U	U	U	690	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	ACENAPHTHENE	U	6000	6000	69	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	ACENAPHTHYLENE	U	768	768	69	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	ACETOPHENONE	U	U	U	340	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	ANTHRACENE	U	8250	8250	1400	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	ATRAZINE	U	U	U	140	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	BENZALDEHYDE	U	U	U	340	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	BENZO(A)ANTHRACENE	U	8610	8610	1400	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	BENZO(A)PYRENE	U	6110	6110	1400	Qualify	1

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-CC31A-14.0-14.5	JC14857-3A	BENZO(B)FLUORANTHENE	U	6460	6460	1400	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	BENZO(G,H,I)PERYLENE	U	2570	2570	69	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	BENZO(K)FLUORANTHENE	U	2350	2350	1400	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	BENZYL BUTYL PHTHALATE	U	U	U	140	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	BIS(-2-CHLOROETHOXY)METHANE	U	U	U	140	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	BIS(2-CHLOROETHYL)ETHER	U	U	U	140	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	BIS(2-ETHYLHEXYL)PHTHALATE	U	U	U	140	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	CAPROLACTAM	U	U	U	140	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	CARBAZOLE	U	1540	1540	140	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	CHRYSENE	U	6850	6850	1400	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	DIBENZO(A,H)ANTHRACENE	U	994	994	69	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	DIBENZOFURAN	U	4150	4150	140	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	DIETHYL PHTHALATE	U	U	U	140	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	DIMETHYL PHTHALATE	U	U	U	140	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	DI-N-BUTYLPHTHALATE	U	U	U	140	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	DI-N-OCTYL PHTHALATE	U	U	U	140	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	FLUORANTHENE	U	19800	19800	1400	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	FLUORENE	U	6300	6300	1400	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	HEXACHLORO-1,3-BUTADIENE	U	U	U	69	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	HEXACHLOROBENZENE	U	U	U	140	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	HEXACHLOROCYCLOPENTADIENE	U	U	U	690	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	HEXACHLOROETHANE	U	U	U	340	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	INDENO(1,2,3-CD)PYRENE	U	3490	3490	69	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	NAPHTHALENE	U	577	577	69	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	NITROBENZENE	U	U	U	140	Qualify	1

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135-CC31A-14.0-14.5	JC14857-3A	N-NITROSO-DI-N-PROPYLAMINE	U	U	U	140	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	N-NITROSODIPHENYLAMINE	U	U	U	340	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	P-CHLOROANILINE	U	U	U	340	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	PENTACHLOROPHENOL	U	U	U	340	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	PHENANTHRENE	U	33200	33200	1400	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	PHENOL	U	U	U	140	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	P-NITROANILINE	U	U	U	340	Qualify	1
135-CC31A-14.0-14.5	JC14857-3A	PYRENE	U	18500	18500	1400	Qualify	1
135-CC31A-16.0-16.5	JC14857-4A	2-METHYLNAPHTHALENE	U	410	410	83		
135-CC31A-16.0-16.5	JC14857-4A	ACENAPHTHENE	U	571	571	41		
135-CC31A-16.0-16.5	JC14857-4A	ANTHRACENE	U	46.7	46.7	41		
135-CC31A-16.0-16.5	JC14857-4A	BENZALDEHYDE	U	70.7J	70.7	210	Qualify	2
135-CC31A-16.0-16.5	JC14857-4A	BENZO(A)ANTHRACENE	U	36.6J	36.6	41	Qualify	2
135-CC31A-16.0-16.5	JC14857-4A	BENZO(A)PYRENE	U	39.4J	39.4	41	Qualify	2
135-CC31A-16.0-16.5	JC14857-4A	BENZO(B)FLUORANTHENE	U	41.8	41.8	41		
135-CC31A-16.0-16.5	JC14857-4A	BENZO(G,H,I)PERYLENE	U	25.6J	25.6	41	Qualify	2
135-CC31A-16.0-16.5	JC14857-4A	CARBAZOLE	U	39.1J	39.1	83	Qualify	2
135-CC31A-16.0-16.5	JC14857-4A	CHRYSENE	U	43.0	43.0	41		
135-CC31A-16.0-16.5	JC14857-4A	DIBENZOFURAN	U	152	152	83		
135-CC31A-16.0-16.5	JC14857-4A	FLUORANTHENE	U	70.6	70.6	41		
135-CC31A-16.0-16.5	JC14857-4A	FLUORENE	U	298	298	41		
135-CC31A-16.0-16.5	JC14857-4A	NAPHTHALENE	U	240	240	41		
135-CC31A-16.0-16.5	JC14857-4A	PHENANTHRENE	U	204	204	41		
135-CC31A-16.0-16.5	JC14857-4A	PYRENE	U	85.1	85.1	41		
135-CC31A-16.5-17.0	JC14857-5A	1,2,4,5-TETRACHLOROBENZENE	U	U	U	560	Qualify	1

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135-CC31A-16.5-17.0	JC14857-5A	1,4-DIOXANE	U	U	U	110	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	1-1'-BIPHENYL	U	U	U	220	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	2,2'-OXYBIS(1-CHLOROPROPANE)	U	U	U	220	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	2,3,4,6-Tetrachlorophenol	U	U	U	560	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	2,4,5-TRICHLOROPHENOL	U	U	U	560	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	2,4,6-TRICHLOROPHENOL	U	U	U	560	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	2,4-DICHLOROPHENOL	U	U	U	560	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	2,4-DIMETHYLPHENOL	U	U	U	560	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	2,4-DINITROPHENOL	U	U	U	560	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	2,4-DINITROTOLUENE	U	U	U	110	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	2,6-DINITROTOLUENE	U	U	U	110	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	2-CHLORONAPHTHALENE	U	U	U	220	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	2-CHLOROPHENOL	U	U	U	220	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	2-METHYLNAPHTHALENE	U	U	U	220	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	2-METHYLPHENOL	U	U	U	220	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	2-NITROANILINE	U	U	U	560	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	2-NITROPHENOL	U	U	U	560	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	3,3'-DICHLOROBENZIDINE	U	U	U	220	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	3,5,5-TRIMETHYL-2-CYCLOHEXENE-1-ONE	U	U	U	220	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	3+4-METHYLPHENOL	U	U	U	220	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	3-NITROANILINE	U	U	U	560	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	4,6-DINITRO-2-METHYLPHENOL	U	U	U	560	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	4-BROMOPHENYL PHENYL ETHER	U	U	U	220	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	4-CHLORO-3-METHYLPHENOL	U	U	U	560	Qualify	1

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135-CC31A-16.5-17.0	JC14857-5A	4-CHLOROPHENYL PHENYL ETHER	U	U	U	220	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	4-NITROPHENOL	U	U	U	1100	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	ACENAPHTHENE	U	U	U	110	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	ACENAPHTHYLENE	U	U	U	110	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	ACETOPHENONE	U	U	U	560	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	ANTHRACENE	U	U	U	110	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	ATRAZINE	U	U	U	220	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	BENZALDEHYDE	U	264J	264	560	Qualify	1,2
135-CC31A-16.5-17.0	JC14857-5A	BENZO(A)ANTHRACENE	U	U	U	110	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	BENZO(A)PYRENE	U	U	U	110	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	BENZO(B)FLUORANTHENE	U	U	U	110	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	BENZO(G,H,I)PERYLENE	U	U	U	110	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	BENZO(K)FLUORANTHENE	U	U	U	110	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	BENZYL BUTYL PHTHALATE	U	U	U	220	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	BIS(-2-CHLOROETHOXY)METHANE	U	U	U	220	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	BIS(2-CHLOROETHYL)ETHER	U	U	U	220	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	BIS(2-ETHYLHEXYL)PHTHALATE	U	U	U	220	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	CAPROLACTAM	U	U	U	220	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	CARBAZOLE	U	51.2J	51.2	220	Qualify	1,2
135-CC31A-16.5-17.0	JC14857-5A	CHRYSENE	U	U	U	110	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	DIBENZO(A,H)ANTHRACENE	U	U	U	110	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	DIBENZOFURAN	U	91.8J	91.8	220	Qualify	1,2
135-CC31A-16.5-17.0	JC14857-5A	DIETHYL PHTHALATE	U	U	U	220	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	DIMETHYL PHTHALATE	U	U	U	220	Qualify	1

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-CC31A-16.5-17.0	JC14857-5A	DI-N-BUTYLPHTHALATE	U	U	U	220	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	DI-N-OCTYL PHTHALATE	U	U	U	220	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	FLUORANTHENE	U	70.5J	70.5	110	Qualify	1,2
135-CC31A-16.5-17.0	JC14857-5A	FLUORENE	U	U	U	110	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	HEXACHLORO-1,3-BUTADIENE	U	U	U	110	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	HEXACHLOROBENZENE	U	U	U	220	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	HEXACHLOROCYCLOPENTADIENE	U	U	U	1100	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	HEXACHLOROETHANE	U	U	U	560	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	INDENO(1,2,3-CD)PYRENE	U	U	U	110	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	NAPHTHALENE	U	164	164	110	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	NITROBENZENE	U	U	U	220	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	N-NITROSO-DI-N-PROPYLAMINE	U	U	U	220	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	N-NITROSODIPHENYLAMINE	U	U	U	560	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	P-CHLOROANILINE	U	U	U	560	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	PENTACHLOROPHENOL	U	U	U	560	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	PHENANTHRENE	U	223	223	110	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	PHENOL	U	U	U	220	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	P-NITROANILINE	U	U	U	560	Qualify	1
135-CC31A-16.5-17.0	JC14857-5A	PYRENE	U	45.2J	45.2	110	Qualify	1,2
135-CC31A-2.0-2.5	JC14857-6A	1-1'-BIPHENYL	U	35.9J	35.9	79	Qualify	2
135-CC31A-2.0-2.5	JC14857-6A	2-METHYLNAPHTHALENE	U	68.5J	68.5	79	Qualify	2
135-CC31A-2.0-2.5	JC14857-6A	ACENAPHTHENE	U	87.2	87.2	40		
135-CC31A-2.0-2.5	JC14857-6A	ACENAPHTHYLENE	U	87.6	87.6	40		
135-CC31A-2.0-2.5	JC14857-6A	ANTHRACENE	U	242	242	40		
135-CC31A-2.0-2.5	JC14857-6A	BENZALDEHYDE	U	50.9J	50.9	200	Qualify	2

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-CC31A-2.0-2.5	JC14857-6A	BENZO(A)ANTHRACENE	U	827	827	40		
135-CC31A-2.0-2.5	JC14857-6A	BENZO(A)PYRENE	U	798	798	40		
135-CC31A-2.0-2.5	JC14857-6A	BENZO(B)FLUORANTHENE	U	1050	1050	40		
135-CC31A-2.0-2.5	JC14857-6A	BENZO(G,H,I)PERYLENE	U	589	589	40		
135-CC31A-2.0-2.5	JC14857-6A	BENZO(K)FLUORANTHENE	U	379	379	40		
135-CC31A-2.0-2.5	JC14857-6A	CARBAZOLE	U	121	121	79		
135-CC31A-2.0-2.5	JC14857-6A	CHRYSENE	U	893	893	40		
135-CC31A-2.0-2.5	JC14857-6A	DIBENZO(A,H)ANTHRACENE	U	160	160	40		
135-CC31A-2.0-2.5	JC14857-6A	DIBENZOFURAN	U	63.8J	63.8	79	Qualify	2
135-CC31A-2.0-2.5	JC14857-6A	FLUORANTHENE	U	1530	1530	40		
135-CC31A-2.0-2.5	JC14857-6A	FLUORENE	U	74.7	74.7	40		
135-CC31A-2.0-2.5	JC14857-6A	INDENO(1,2,3-CD)PYRENE	U	616	616	40		
135-CC31A-2.0-2.5	JC14857-6A	NAPHTHALENE	U	89.7	89.7	40		
135-CC31A-2.0-2.5	JC14857-6A	PHENANTHRENE	U	1030	1030	40		
135-CC31A-2.0-2.5	JC14857-6A	PYRENE	U	1410	1410	40		
135-CC31A-4.0-4.5	JC14857-7A	1-1'-BIPHENYL	U	125	125	79		
135-CC31A-4.0-4.5	JC14857-7A	2-METHYLNAPHTHALENE	U	325	325	79		
135-CC31A-4.0-4.5	JC14857-7A	3+4-METHYLPHENOL	U	52.1J	52.1	79	Qualify	2
135-CC31A-4.0-4.5	JC14857-7A	ACENAPHTHENE	U	291	291	40		
135-CC31A-4.0-4.5	JC14857-7A	ACENAPHTHYLENE	U	283	283	40		
135-CC31A-4.0-4.5	JC14857-7A	ACETOPHENONE	U	86.9J	86.9	200	Qualify	2
135-CC31A-4.0-4.5	JC14857-7A	ANTHRACENE	U	1100	1100	40		
135-CC31A-4.0-4.5	JC14857-7A	BENZALDEHYDE	U	492	492	200		
135-CC31A-4.0-4.5	JC14857-7A	BENZO(A)ANTHRACENE	U	3310	3310	40		
135-CC31A-4.0-4.5	JC14857-7A	BENZO(A)PYRENE	U	2910	2910	40		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-CC31A-4.0-4.5	JC14857-7A	BENZO(B)FLUORANTHENE	U	3920	3920	40		
135-CC31A-4.0-4.5	JC14857-7A	BENZO(G,H,I)PERYLENE	U	2180	2180	40		
135-CC31A-4.0-4.5	JC14857-7A	BENZO(K)FLUORANTHENE	U	1150	1150	40		
135-CC31A-4.0-4.5	JC14857-7A	CARBAZOLE	U	395	395	79		
135-CC31A-4.0-4.5	JC14857-7A	CHRYSENE	U	3610	3610	40		
135-CC31A-4.0-4.5	JC14857-7A	DIBENZO(A,H)ANTHRACENE	U	628	628	40		
135-CC31A-4.0-4.5	JC14857-7A	DIBENZOFURAN	U	392	392	79		
135-CC31A-4.0-4.5	JC14857-7A	FLUORANTHENE	U	6120	6120	160		
135-CC31A-4.0-4.5	JC14857-7A	FLUORENE	U	255	255	40		
135-CC31A-4.0-4.5	JC14857-7A	INDENO(1,2,3-CD)PYRENE	U	2210	2210	40		
135-CC31A-4.0-4.5	JC14857-7A	NAPHTHALENE	U	628	628	40		
135-CC31A-4.0-4.5	JC14857-7A	PHENANTHRENE	U	5250	5250	160		
135-CC31A-4.0-4.5	JC14857-7A	PYRENE	U	5920	5920	160		
135-CC31A-6.0-6.5	JC14857-8A	2-METHYLNAPHTHALENE	U	3310	3310	470		
135-CC31A-6.0-6.5	JC14857-8A	3+4-METHYLPHENOL	U	1320	1320	94		
135-CC31A-6.0-6.5	JC14857-8A	ACENAPHTHENE	U	5330	5330	240		
135-CC31A-6.0-6.5	JC14857-8A	ANTHRACENE	U	2510	2510	47		
135-CC31A-6.0-6.5	JC14857-8A	BENZO(A)ANTHRACENE	U	4160	4160	47		
135-CC31A-6.0-6.5	JC14857-8A	BENZO(A)PYRENE	U	2640	2640	47		
135-CC31A-6.0-6.5	JC14857-8A	BENZO(B)FLUORANTHENE	U	1240	1240	47		
135-CC31A-6.0-6.5	JC14857-8A	BENZO(G,H,I)PERYLENE	U	1820	1820	47		
135-CC31A-6.0-6.5	JC14857-8A	BENZO(K)FLUORANTHENE	U	312	312	47		
135-CC31A-6.0-6.5	JC14857-8A	CHRYSENE	U	6380	6380	240		
135-CC31A-6.0-6.5	JC14857-8A	DIBENZO(A,H)ANTHRACENE	U	429	429	47		
135-CC31A-6.0-6.5	JC14857-8A	FLUORANTHENE	U	3040	3040	47		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-CC31A-6.0-6.5	JC14857-8A	FLUORENE	U	5830	5830	240		
135-CC31A-6.0-6.5	JC14857-8A	INDENO(1,2,3-CD)PYRENE	U	739	739	47		
135-CC31A-6.0-6.5	JC14857-8A	NAPHTHALENE	U	1680	1680	47		
135-CC31A-6.0-6.5	JC14857-8A	PHENANTHRENE	U	10900	10900	240		
135-CC31A-6.0-6.5	JC14857-8A	PHENOL	U	180	180	94		
135-CC31A-6.0-6.5	JC14857-8A	PYRENE	U	9710	9710	240		
135-CC31A-8.0-8.5	JC14857-9A	2-METHYLNAPHTHALENE	U	2460	2460	87		
135-CC31A-8.0-8.5	JC14857-9A	3+4-METHYLPHENOL	U	476	476	87		
135-CC31A-8.0-8.5	JC14857-9A	ACENAPHTHENE	U	3260	3260	43		
135-CC31A-8.0-8.5	JC14857-9A	ANTHRACENE	U	1150	1150	43		
135-CC31A-8.0-8.5	JC14857-9A	BENZO(A)ANTHRACENE	U	1640	1640	43		
135-CC31A-8.0-8.5	JC14857-9A	BENZO(A)PYRENE	U	997	997	43		
135-CC31A-8.0-8.5	JC14857-9A	BENZO(B)FLUORANTHENE	U	533	533	43		
135-CC31A-8.0-8.5	JC14857-9A	BENZO(G,H,I)PERYLENE	U	612	612	43		
135-CC31A-8.0-8.5	JC14857-9A	BENZO(K)FLUORANTHENE	U	107	107	43		
135-CC31A-8.0-8.5	JC14857-9A	CHRYSENE	U	2690	2690	43		
135-CC31A-8.0-8.5	JC14857-9A	DIBENZO(A,H)ANTHRACENE	U	163	163	43		
135-CC31A-8.0-8.5	JC14857-9A	FLUORANTHENE	U	1580	1580	43		
135-CC31A-8.0-8.5	JC14857-9A	FLUORENE	U	2570	2570	43		
135-CC31A-8.0-8.5	JC14857-9A	INDENO(1,2,3-CD)PYRENE	U	240	240	43		
135-CC31A-8.0-8.5	JC14857-9A	NAPHTHALENE	U	1790	1790	43		
135-CC31A-8.0-8.5	JC14857-9A	PHENANTHRENE	U	6320	6320	170		
135-CC31A-8.0-8.5	JC14857-9A	PYRENE	U	3730	3730	43		

Table Note: A “U” under Method Blank column indicates a nondetect result.

A “U” under the Laboratory Sample Result and Validation Sample Result columns indicates a nondetect result at the RL.

NJDEP Laboratory Footnote

1. The result was estimated because the percent solids were less than 50%.

2. The reported result was greater than the MDL but less than the RL and therefore was estimated (J).

3. The result was estimated because the field duplicate RPD exceeded the QC criteria for results > 5X the RL.

4. The positive result was estimated because the surrogate recoveries were diluted out.

5. The positive result was estimated because the LCS recovery exceeded the QC criteria. A high bias may be present.

6. The VOC or SVOC result was **rejected** because the MS and/or MSD recovery was below the lower limit for rejection.

7. The result was qualified because several surrogate recoveries were outside of QC criteria.

8. The positive and /or nondetected values were estimated because the MS and/or MSD recoveries were below the QC criteria.

9. The positive and nondetect values were estimated because the MS/MSD RPD exceeded the QC criteria

TAL Metals Soil Target Analyte Summary Hit List

Site Name PPG Site 135/South Supplemental PDI Soil Sampling
Sampling Dates February 25, 2016
Lab Name/ID Accutest, Dayton, NJ
SDG No JC14857A
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID 135-FB20160225

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-BB35AR-1.0-1.5	JC14857-10A	ALUMINUM	U	9040	9040	54	Qualify	1
135-BB35AR-1.0-1.5	JC14857-10A	ANTIMONY	U	0.59B	0.59	2.1	Qualify	2,3
135-BB35AR-1.0-1.5	JC14857-10A	ARSENIC	U	7.1	7.1	2.1		
135-BB35AR-1.0-1.5	JC14857-10A	BARIUM	U	249	249	21	Qualify	6,8

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-BB35AR-1.0-1.5	JC14857-10A	BERYLLIUM	U	0.38	0.38	0.21		
135-BB35AR-1.0-1.5	JC14857-10A	CADMIUM	U	0.89	0.89	0.54		
135-BB35AR-1.0-1.5	JC14857-10A	CALCIUM METAL	U	27700	27700	540	Qualify	8
135-BB35AR-1.0-1.5	JC14857-10A	CHROMIUM	U	30.5	30.5	1.1		
135-BB35AR-1.0-1.5	JC14857-10A	COBALT	U	8.2	8.2	5.4		
135-BB35AR-1.0-1.5	JC14857-10A	COPPER	U	101	101	2.7		
135-BB35AR-1.0-1.5	JC14857-10A	IRON	U	17200	17200	54		
135-BB35AR-1.0-1.5	JC14857-10A	LEAD	U	168	168	2.1	Qualify	6,8
135-BB35AR-1.0-1.5	JC14857-10A	MAGNESIUM	U	7120	7120	540		
135-BB35AR-1.0-1.5	JC14857-10A	MANGANESE	U	384	384	1.6	Qualify	6,8
135-BB35AR-1.0-1.5	JC14857-10A	NICKEL	U	20.9	20.9	4.3		
135-BB35AR-1.0-1.5	JC14857-10A	POTASSIUM	U	1390	1390	1100		
135-BB35AR-1.0-1.5	JC14857-10A	SELENIUM	U	0.67B	0.67	2.1	Qualify	2
135-BB35AR-1.0-1.5	JC14857-10A	SILVER	U	0.26B	0.26	0.54	Qualify	2
135-BB35AR-1.0-1.5	JC14857-10A	SODIUM	U	703B	703	1100	Qualify	2
135-BB35AR-1.0-1.5	JC14857-10A	VANADIUM	U	47.9	47.9	5.4		
135-BB35AR-1.0-1.5	JC14857-10A	ZINC	U	324	324	5.4	Qualify	6,8
135-BB35AR-11.0-11.5	JC14857-11A	ALUMINUM	U	10500	10500	46	Qualify	4
135-BB35AR-11.0-11.5	JC14857-11A	ANTIMONY	U	0.42B	0.42	1.8	Qualify	2,3
135-BB35AR-11.0-11.5	JC14857-11A	ARSENIC	U	4.5	4.5	1.8		
135-BB35AR-11.0-11.5	JC14857-11A	BARIUM	U	45.9	45.9	18	Qualify	6,8
135-BB35AR-11.0-11.5	JC14857-11A	BERYLLIUM	U	0.74	0.74	0.18		
135-BB35AR-11.0-11.5	JC14857-11A	CADMIUM	U	0.32B	0.32	0.46	Qualify	2
135-BB35AR-11.0-11.5	JC14857-11A	CALCIUM METAL	U	1480	1480	460	Qualify	8
135-BB35AR-11.0-11.5	JC14857-11A	CHROMIUM	U	20.2	20.2	0.92		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-BB35AR-11.0-11.5	JC14857-11A	COBALT	U	7.1	7.1	4.6		
135-BB35AR-11.0-11.5	JC14857-11A	COPPER	U	14.6	14.6	2.3		
135-BB35AR-11.0-11.5	JC14857-11A	IRON	U	12900	12900	46		
135-BB35AR-11.0-11.5	JC14857-11A	LEAD	U	38.6	38.6	1.8	Qualify	6,8
135-BB35AR-11.0-11.5	JC14857-11A	MAGNESIUM	U	3410	3410	460		
135-BB35AR-11.0-11.5	JC14857-11A	MANGANESE	U	257	257	1.4	Qualify	6,8
135-BB35AR-11.0-11.5	JC14857-11A	NICKEL	U	12.9	12.9	3.7		
135-BB35AR-11.0-11.5	JC14857-11A	POTASSIUM	U	1530	1530	920		
135-BB35AR-11.0-11.5	JC14857-11A	SODIUM	U	642B	642	920	Qualify	2
135-BB35AR-11.0-11.5	JC14857-11A	VANADIUM	U	32.1	32.1	4.6		
135-BB35AR-11.0-11.5	JC14857-11A	ZINC	U	96.5	96.5	4.6	Qualify	6,8
135-BB35AR-13.0-13.5	JC14857-12A	ALUMINUM	U	12800	12800	61	Qualify	4
135-BB35AR-13.0-13.5	JC14857-12A	ANTIMONY	U	U	U	2.5	Qualify	3
135-BB35AR-13.0-13.5	JC14857-12A	ARSENIC	U	5.5	5.5	2.5		
135-BB35AR-13.0-13.5	JC14857-12A	BARIUM	U	58.7	58.7	25	Qualify	6,8
135-BB35AR-13.0-13.5	JC14857-12A	BERYLLIUM	U	0.64	0.64	0.25		
135-BB35AR-13.0-13.5	JC14857-12A	CADMIUM	U	0.21B	0.21	0.61	Qualify	2
135-BB35AR-13.0-13.5	JC14857-12A	CALCIUM METAL	U	1440	1440	610	Qualify	8
135-BB35AR-13.0-13.5	JC14857-12A	CHROMIUM	U	16.7	16.7	1.2		
135-BB35AR-13.0-13.5	JC14857-12A	COBALT	U	7.7	7.7	6.1		
135-BB35AR-13.0-13.5	JC14857-12A	COPPER	U	12.7	12.7	3.1		
135-BB35AR-13.0-13.5	JC14857-12A	IRON	U	12900	12900	61		
135-BB35AR-13.0-13.5	JC14857-12A	LEAD	U	30.3	30.3	2.5	Qualify	6,8
135-BB35AR-13.0-13.5	JC14857-12A	MAGNESIUM	U	3180	3180	610		
135-BB35AR-13.0-13.5	JC14857-12A	MANGANESE	U	236	236	1.8	Qualify	6,8

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-BB35AR-13.0-13.5	JC14857-12A	NICKEL	U	13.2	13.2	4.9		
135-BB35AR-13.0-13.5	JC14857-12A	POTASSIUM	U	1210	1210	1200		
135-BB35AR-13.0-13.5	JC14857-12A	SELENIUM	U	0.64B	0.64	2.5	Qualify	2
135-BB35AR-13.0-13.5	JC14857-12A	SODIUM	U	943B	943	1200	Qualify	2
135-BB35AR-13.0-13.5	JC14857-12A	VANADIUM	U	27.4	27.4	6.1		
135-BB35AR-13.0-13.5	JC14857-12A	ZINC	U	80.9	80.9	6.1	Qualify	6,8
135-BB35AR-14.0-14.5	JC14857-13A	ALUMINUM	U	10800	10800	56	Qualify	4
135-BB35AR-14.0-14.5	JC14857-13A	ANTIMONY	U	U	U	2.3	Qualify	3
135-BB35AR-14.0-14.5	JC14857-13A	ARSENIC	U	5.4	5.4	2.3		
135-BB35AR-14.0-14.5	JC14857-13A	BARIUM	U	40.3	40.3	23	Qualify	6,8
135-BB35AR-14.0-14.5	JC14857-13A	BERYLLIUM	U	0.72	0.72	0.23		
135-BB35AR-14.0-14.5	JC14857-13A	CADMIUM	U	0.26B	0.26	0.56	Qualify	2
135-BB35AR-14.0-14.5	JC14857-13A	CALCIUM METAL	U	1360	1360	560	Qualify	8
135-BB35AR-14.0-14.5	JC14857-13A	CHROMIUM	U	17.4	17.4	1.1		
135-BB35AR-14.0-14.5	JC14857-13A	COBALT	U	7.3	7.3	5.6		
135-BB35AR-14.0-14.5	JC14857-13A	COPPER	U	13.0	13.0	2.8		
135-BB35AR-14.0-14.5	JC14857-13A	IRON	U	14200	14200	56		
135-BB35AR-14.0-14.5	JC14857-13A	LEAD	U	21.6	21.6	2.3	Qualify	6,8
135-BB35AR-14.0-14.5	JC14857-13A	MAGNESIUM	U	3460	3460	560		
135-BB35AR-14.0-14.5	JC14857-13A	MANGANESE	U	382	382	1.7	Qualify	6,8
135-BB35AR-14.0-14.5	JC14857-13A	NICKEL	U	12.5	12.5	4.5		
135-BB35AR-14.0-14.5	JC14857-13A	POTASSIUM	U	1400	1400	1100		
135-BB35AR-14.0-14.5	JC14857-13A	SELENIUM	U	0.37B	0.37	2.3	Qualify	2
135-BB35AR-14.0-14.5	JC14857-13A	SODIUM	U	766B	766	1100	Qualify	2
135-BB35AR-14.0-14.5	JC14857-13A	VANADIUM	U	29.1	29.1	5.6		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-BB35AR-14.0-14.5	JC14857-13A	ZINC	U	81.2	81.2	5.6	Qualify	6,8
135-BB35AR-15.0-15.5	JC14857-14A	ALUMINUM	U	12200	12200	97	Qualify	4,7
135-BB35AR-15.0-15.5	JC14857-14A	ANTIMONY	U	U	U	3.9	Qualify	3,7
135-BB35AR-15.0-15.5	JC14857-14A	ARSENIC	U	4.4	4.4	3.9	Qualify	7
135-BB35AR-15.0-15.5	JC14857-14A	BARIUM	U	45.3	45.3	39	Qualify	6,7,8
135-BB35AR-15.0-15.5	JC14857-14A	BERYLLIUM	U	0.46	0.46	0.39	Qualify	7
135-BB35AR-15.0-15.5	JC14857-14A	CADMIUM	U	0.14B	0.14	0.97	Qualify	2,7
135-BB35AR-15.0-15.5	JC14857-14A	CALCIUM METAL	U	2340	2340	970	Qualify	7,8
135-BB35AR-15.0-15.5	JC14857-14A	CHROMIUM	U	20.6	20.6	1.9	Qualify	7
135-BB35AR-15.0-15.5	JC14857-14A	COBALT	U	2.3B	2.3	9.7	Qualify	2,7
135-BB35AR-15.0-15.5	JC14857-14A	COPPER	U	8.7	8.7	4.8	Qualify	7
135-BB35AR-15.0-15.5	JC14857-14A	IRON	U	5800	5800	97	Qualify	7
135-BB35AR-15.0-15.5	JC14857-14A	LEAD	U	34.5	34.5	3.9	Qualify	6,7,8
135-BB35AR-15.0-15.5	JC14857-14A	MAGNESIUM	U	2900	2900	970	Qualify	7
135-BB35AR-15.0-15.5	JC14857-14A	MANGANESE	U	60.0	60.0	2.9	Qualify	6,7,8
135-BB35AR-15.0-15.5	JC14857-14A	NICKEL	U	7.3B	7.3	7.7	Qualify	2,7
135-BB35AR-15.0-15.5	JC14857-14A	POTASSIUM	U	2920	2920	1900	Qualify	7
135-BB35AR-15.0-15.5	JC14857-14A	SELENIUM	U	1.2B	1.2	3.9	Qualify	2,7
135-BB35AR-15.0-15.5	JC14857-14A	SILVER	U	U	U	0.97	Qualify	7
135-BB35AR-15.0-15.5	JC14857-14A	SODIUM	U	5410	5410	1900	Qualify	7
135-BB35AR-15.0-15.5	JC14857-14A	THALLIUM	U	U	U	1.9	Qualify	7
135-BB35AR-15.0-15.5	JC14857-14A	VANADIUM	U	30.4	30.4	9.7	Qualify	7
135-BB35AR-15.0-15.5	JC14857-14A	ZINC	U	15.5	15.5	9.7	Qualify	6,7,8
135-BB35AR-3.0-3.5	JC14857-15A	ALUMINUM	U	15300	15300	64	Qualify	4
135-BB35AR-3.0-3.5	JC14857-15A	ANTIMONY	U	4.9	4.9	2.6	Qualify	3

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-BB35AR-3.0-3.5	JC14857-15A	ARSENIC	U	19.5	19.5	2.6		
135-BB35AR-3.0-3.5	JC14857-15A	BARIUM	U	480	480	26	Qualify	6,8
135-BB35AR-3.0-3.5	JC14857-15A	BERYLLIUM	U	0.65	0.65	0.26		
135-BB35AR-3.0-3.5	JC14857-15A	CADMIUM	U	3.7	3.7	0.64		
135-BB35AR-3.0-3.5	JC14857-15A	CALCIUM METAL	U	11800	11800	640	Qualify	8
135-BB35AR-3.0-3.5	JC14857-15A	CHROMIUM	U	45.1	45.1	1.3		
135-BB35AR-3.0-3.5	JC14857-15A	COBALT	U	6.7	6.7	6.4		
135-BB35AR-3.0-3.5	JC14857-15A	COPPER	U	218	218	3.2		
135-BB35AR-3.0-3.5	JC14857-15A	IRON	U	20000	20000	64		
135-BB35AR-3.0-3.5	JC14857-15A	LEAD	U	882	882	2.6	Qualify	6,8
135-BB35AR-3.0-3.5	JC14857-15A	MAGNESIUM	U	1730	1730	640		
135-BB35AR-3.0-3.5	JC14857-15A	MANGANESE	U	405	405	1.9	Qualify	6,8
135-BB35AR-3.0-3.5	JC14857-15A	NICKEL	U	22.2	22.2	5.1		
135-BB35AR-3.0-3.5	JC14857-15A	POTASSIUM	U	1130B	1130	1300	Qualify	2
135-BB35AR-3.0-3.5	JC14857-15A	SELENIUM	U	1.9B	1.9	2.6	Qualify	2
135-BB35AR-3.0-3.5	JC14857-15A	SILVER	U	0.55B	0.55	0.64	Qualify	2
135-BB35AR-3.0-3.5	JC14857-15A	SODIUM	U	373B	373	1300	Qualify	1,2
135-BB35AR-3.0-3.5	JC14857-15A	THALLIUM	U	0.60B	0.60	1.3	Qualify	2
135-BB35AR-3.0-3.5	JC14857-15A	VANADIUM	U	31.3	31.3	6.4		
135-BB35AR-3.0-3.5	JC14857-15A	ZINC	U	2420	2420	19	Qualify	6,8
135-BB35AR-5.0-5.5	JC14857-16A	ALUMINUM	U	9480	9480	66	Qualify	8
135-BB35AR-5.0-5.5	JC14857-16A	ANTIMONY	U	10.9	10.9	2.6	Qualify	3
135-BB35AR-5.0-5.5	JC14857-16A	ARSENIC	U	29.9	29.9	2.6		
135-BB35AR-5.0-5.5	JC14857-16A	BARIUM	U	194	194	26	Qualify	6,8
135-BB35AR-5.0-5.5	JC14857-16A	BERYLLIUM	U	0.58	0.58	0.26		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-BB35AR-5.0-5.5	JC14857-16A	CADMIUM	U	1.5	1.5	0.66		
135-BB35AR-5.0-5.5	JC14857-16A	CALCIUM METAL	U	4560	4560	660	Qualify	8
135-BB35AR-5.0-5.5	JC14857-16A	CHROMIUM	U	70.7	70.7	1.3		
135-BB35AR-5.0-5.5	JC14857-16A	COBALT	U	12.5	12.5	6.6		
135-BB35AR-5.0-5.5	JC14857-16A	COPPER	U	372	372	3.3		
135-BB35AR-5.0-5.5	JC14857-16A	IRON	U	27900	27900	66		
135-BB35AR-5.0-5.5	JC14857-16A	LEAD	U	590	590	2.6	Qualify	6,8
135-BB35AR-5.0-5.5	JC14857-16A	MAGNESIUM	U	1800	1800	660		
135-BB35AR-5.0-5.5	JC14857-16A	MANGANESE	U	349	349	2.0	Qualify	6,8
135-BB35AR-5.0-5.5	JC14857-16A	NICKEL	U	21.6	21.6	5.3		
135-BB35AR-5.0-5.5	JC14857-16A	POTASSIUM	U	1100B	1100	1300	Qualify	2
135-BB35AR-5.0-5.5	JC14857-16A	SELENIUM	U	3.2	3.2	2.6		
135-BB35AR-5.0-5.5	JC14857-16A	SODIUM	U	781B	781	1300	Qualify	2
135-BB35AR-5.0-5.5	JC14857-16A	THALLIUM	U	0.63B	0.63	1.3	Qualify	2
135-BB35AR-5.0-5.5	JC14857-16A	VANADIUM	U	38.4	38.4	6.6		
135-BB35AR-5.0-5.5	JC14857-16A	ZINC	U	892	892	6.6	Qualify	6,8
135-BB35AR-7.0-7.5	JC14857-17A	ALUMINUM	U	12600	12600	61	Qualify	4,5
135-BB35AR-7.0-7.5	JC14857-17A	ANTIMONY	U	0.79B	0.79	2.4	Qualify	2,3
135-BB35AR-7.0-7.5	JC14857-17A	ARSENIC	U	5.7	5.7	2.4		
135-BB35AR-7.0-7.5	JC14857-17A	BARIUM	U	69.4	69.4	24	Qualify	6,8
135-BB35AR-7.0-7.5	JC14857-17A	BERYLLIUM	U	1.1	1.1	0.24		
135-BB35AR-7.0-7.5	JC14857-17A	CADMIUM	U	0.43B	0.43	0.61	Qualify	2
135-BB35AR-7.0-7.5	JC14857-17A	CALCIUM METAL	U	2590	2590	610	Qualify	5
135-BB35AR-7.0-7.5	JC14857-17A	CHROMIUM	U	27.0	27.0	1.2		
135-BB35AR-7.0-7.5	JC14857-17A	COBALT	U	9.2	9.2	6.1		

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135-BB35AR-7.0-7.5	JC14857-17A	COPPER	U	24.3	24.3	3.0		
135-BB35AR-7.0-7.5	JC14857-17A	IRON	U	16600	16600	61		
135-BB35AR-7.0-7.5	JC14857-17A	LEAD	U	63.7	63.7	2.4	Qualify	5
135-BB35AR-7.0-7.5	JC14857-17A	MAGNESIUM	U	4740	4740	610		
135-BB35AR-7.0-7.5	JC14857-17A	MANGANESE	U	261	261	1.8	Qualify	6,8
135-BB35AR-7.0-7.5	JC14857-17A	NICKEL	U	16.6	16.6	4.9		
135-BB35AR-7.0-7.5	JC14857-17A	POTASSIUM	U	2620	2620	1200		
135-BB35AR-7.0-7.5	JC14857-17A	SODIUM	U	614B	614	1200	Qualify	2
135-BB35AR-7.0-7.5	JC14857-17A	VANADIUM	U	46.2	46.2	6.1		
135-BB35AR-7.0-7.5	JC14857-17A	ZINC	U	128	128	6.1	Qualify	5
135-BB35AR-7.0-7.5X	JC14857-18A	ALUMINUM	U	18700	18700	53	Qualify	4,5
135-BB35AR-7.0-7.5X	JC14857-18A	ANTIMONY	U	U	U	2.1	Qualify	3
135-BB35AR-7.0-7.5X	JC14857-18A	ARSENIC	U	4.7	4.7	2.1		
135-BB35AR-7.0-7.5X	JC14857-18A	BARIUM	U	84.6	84.6	21	Qualify	6,8
135-BB35AR-7.0-7.5X	JC14857-18A	BERYLLIUM	U	0.91	0.91	0.21		
135-BB35AR-7.0-7.5X	JC14857-18A	CADMIUM	U	0.32B	0.32	0.53	Qualify	2
135-BB35AR-7.0-7.5X	JC14857-18A	CALCIUM METAL	U	1710	1710	530	Qualify	5
135-BB35AR-7.0-7.5X	JC14857-18A	CHROMIUM	U	25.3	25.3	1.1		
135-BB35AR-7.0-7.5X	JC14857-18A	COBALT	U	9.0	9.0	5.3		
135-BB35AR-7.0-7.5X	JC14857-18A	COPPER	U	17.8	17.8	2.7		
135-BB35AR-7.0-7.5X	JC14857-18A	IRON	U	16400	16400	53		
135-BB35AR-7.0-7.5X	JC14857-18A	LEAD	U	30.4	30.4	2.1	Qualify	5
135-BB35AR-7.0-7.5X	JC14857-18A	MAGNESIUM	U	3670	3670	530		
135-BB35AR-7.0-7.5X	JC14857-18A	MANGANESE	U	222	222	1.6	Qualify	6,8
135-BB35AR-7.0-7.5X	JC14857-18A	NICKEL	U	16.9	16.9	4.3		

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135-BB35AR-7.0-7.5X	JC14857-18A	POTASSIUM	U	1830	1830	1100		
135-BB35AR-7.0-7.5X	JC14857-18A	SODIUM	U	717B	717	1100	Qualify	2
135-BB35AR-7.0-7.5X	JC14857-18A	VANADIUM	U	40.3	40.3	5.3		
135-BB35AR-7.0-7.5X	JC14857-18A	ZINC	U	65.9	65.9	5.3	Qualify	5
135-BB35AR-9.0-9.5	JC14857-19A	ALUMINUM	U	10700	10700	49	Qualify	4
135-BB35AR-9.0-9.5	JC14857-19A	ANTIMONY	U	0.39B	0.39	2.0	Qualify	2,3
135-BB35AR-9.0-9.5	JC14857-19A	ARSENIC	U	3.9	3.9	2.0		
135-BB35AR-9.0-9.5	JC14857-19A	BARIUM	U	39.5	39.5	20	Qualify	6,8
135-BB35AR-9.0-9.5	JC14857-19A	BERYLLIUM	U	0.68	0.68	0.20		
135-BB35AR-9.0-9.5	JC14857-19A	CADMIUM	U	0.25B	0.25	0.49	Qualify	2
135-BB35AR-9.0-9.5	JC14857-19A	CALCIUM METAL	U	1520	1520	490	Qualify	8
135-BB35AR-9.0-9.5	JC14857-19A	CHROMIUM	U	17.8	17.8	0.99		
135-BB35AR-9.0-9.5	JC14857-19A	COBALT	U	6.4	6.4	4.9		
135-BB35AR-9.0-9.5	JC14857-19A	COPPER	U	12.8	12.8	2.5		
135-BB35AR-9.0-9.5	JC14857-19A	IRON	U	12300	12300	49		
135-BB35AR-9.0-9.5	JC14857-19A	LEAD	U	23.8	23.8	2.0	Qualify	6,8
135-BB35AR-9.0-9.5	JC14857-19A	MAGNESIUM	U	3290	3290	490		
135-BB35AR-9.0-9.5	JC14857-19A	MANGANESE	U	183	183	1.5	Qualify	6,8
135-BB35AR-9.0-9.5	JC14857-19A	NICKEL	U	11.4	11.4	4.0		
135-BB35AR-9.0-9.5	JC14857-19A	POTASSIUM	U	1480	1480	990		
135-BB35AR-9.0-9.5	JC14857-19A	SODIUM	U	575B	575	990	Qualify	2
135-BB35AR-9.0-9.5	JC14857-19A	VANADIUM	U	31.8	31.8	4.9		
135-BB35AR-9.0-9.5	JC14857-19A	ZINC	U	57.2	57.2	4.9	Qualify	6,8
135-BB36A-1.5-2.0	JC14857-20A	ALUMINUM	U	6400	6400	55	Qualify	4
135-BB36A-1.5-2.0	JC14857-20A	ANTIMONY	U	1.8B	1.8	2.2	Qualify	2,3

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-BB36A-1.5-2.0	JC14857-20A	ARSENIC	U	16.1	16.1	2.2		
135-BB36A-1.5-2.0	JC14857-20A	BARIUM	U	172	172	22		6,8
135-BB36A-1.5-2.0	JC14857-20A	BERYLLIUM	U	0.53	0.53	0.22		
135-BB36A-1.5-2.0	JC14857-20A	CADMIUM	U	1.0	1.0	0.55		
135-BB36A-1.5-2.0	JC14857-20A	CALCIUM METAL	U	4540	4540	550		8
135-BB36A-1.5-2.0	JC14857-20A	CHROMIUM	U	36.2	36.2	1.1		
135-BB36A-1.5-2.0	JC14857-20A	COBALT	U	5.6	5.6	5.5		
135-BB36A-1.5-2.0	JC14857-20A	COPPER	U	359	359	2.8		
135-BB36A-1.5-2.0	JC14857-20A	IRON	U	17900	17900	55		
135-BB36A-1.5-2.0	JC14857-20A	LEAD	U	314	314	2.2		6,8
135-BB36A-1.5-2.0	JC14857-20A	MAGNESIUM	U	1170	1170	550		
135-BB36A-1.5-2.0	JC14857-20A	MANGANESE	U	153	153	1.7		6,8
135-BB36A-1.5-2.0	JC14857-20A	NICKEL	U	19.2	19.2	4.4		
135-BB36A-1.5-2.0	JC14857-20A	POTASSIUM	U	716B	716	1100	Qualify	2
135-BB36A-1.5-2.0	JC14857-20A	SELENIUM	U	1.7B	1.7	2.2	Qualify	2
135-BB36A-1.5-2.0	JC14857-20A	SILVER	U	0.57	0.57	0.55		
135-BB36A-1.5-2.0	JC14857-20A	SODIUM	U	510B	510	1100	Qualify	1,2
135-BB36A-1.5-2.0	JC14857-20A	THALLIUM	U	0.38B	0.38	1.1	Qualify	2
135-BB36A-1.5-2.0	JC14857-20A	VANADIUM	U	31.5	31.5	5.5		
135-BB36A-1.5-2.0	JC14857-20A	ZINC	U	369	369	5.5		6,8
135-BB36A-11.5-12.0	JC14857-21A	ALUMINUM	U	9690	9690	60	Qualify	4
135-BB36A-11.5-12.0	JC14857-21A	ANTIMONY	U	0.41B	0.41	2.4	Qualify	2,3
135-BB36A-11.5-12.0	JC14857-21A	ARSENIC	U	4.5	4.5	2.4		
135-BB36A-11.5-12.0	JC14857-21A	BARIUM	U	41.4	41.4	24	Qualify	6, 3
135-BB36A-11.5-12.0	JC14857-21A	BERYLLIUM	U	0.22B	0.22	0.24	Qualify	2

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-BB36A-11.5-12.0	JC14857-21A	CALCIUM METAL	U	1090	1090	600	Qualify	4,6
135-BB36A-11.5-12.0	JC14857-21A	CHROMIUM	U	16.2	16.2	1.2		
135-BB36A-11.5-12.0	JC14857-21A	COBALT	U	6.5	6.5	6.0		
135-BB36A-11.5-12.0	JC14857-21A	COPPER	U	10.8	10.8	3.0	Qualify	3
135-BB36A-11.5-12.0	JC14857-21A	IRON	U	13300	13300	60		
135-BB36A-11.5-12.0	JC14857-21A	LEAD	U	17.1	17.1	2.4	Qualify	,6,8
135-BB36A-11.5-12.0	JC14857-21A	MAGNESIUM	U	3590	3590	600		
135-BB36A-11.5-12.0	JC14857-21A	MANGANESE	U	193	193	1.8	Qualify	3
135-BB36A-11.5-12.0	JC14857-21A	NICKEL	U	11.4	11.4	4.8		
135-BB36A-11.5-12.0	JC14857-21A	POTASSIUM	U	1000B	1000	1200	Qualify	2
135-BB36A-11.5-12.0	JC14857-21A	SILVER	U	0.24B	0.24	0.60	Qualify	2
135-BB36A-11.5-12.0	JC14857-21A	SODIUM	U	478B	478	1200	Qualify	1,2
135-BB36A-11.5-12.0	JC14857-21A	VANADIUM	U	27.6	27.6	6.0		
135-BB36A-11.5-12.0	JC14857-21A	ZINC	U	60.4	60.4	6.0	Qualify	6,4
135-BB36A-13.5-14.0	JC14857-22A	ALUMINUM	U	12600	12600	58	Qualify	4
135-BB36A-13.5-14.0	JC14857-22A	ANTIMONY	U	U	U	2.3	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	ARSENIC	U	6.7	6.7	2.3		
135-BB36A-13.5-14.0	JC14857-22A	BARIUM	U	82.8	82.8	23	Qualify	6,8
135-BB36A-13.5-14.0	JC14857-22A	BERYLLIUM	U	0.41	0.41	0.23		
135-BB36A-13.5-14.0	JC14857-22A	CADMIUM	U	0.070B	0.070	0.58	Qualify	2
135-BB36A-13.5-14.0	JC14857-22A	CALCIUM METAL	U	1970	1970	580	Qualify	4,6
135-BB36A-13.5-14.0	JC14857-22A	CHROMIUM	U	13.9	13.9	1.2		
135-BB36A-13.5-14.0	JC14857-22A	COBALT	U	5.5B	5.5	5.8	Qualify	2
135-BB36A-13.5-14.0	JC14857-22A	COPPER	U	113	113	2.9	Qualify	3
135-BB36A-13.5-14.0	JC14857-22A	IRON	U	11400	11400	58		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-BB36A-13.5-14.0	JC14857-22A	LEAD	U	64.5	64.5	2.3	Qualify	3,6
135-BB36A-13.5-14.0	JC14857-22A	MAGNESIUM	U	2690	2690	580		
135-BB36A-13.5-14.0	JC14857-22A	MANGANESE	U	198	198	1.8	Qualify	8
135-BB36A-13.5-14.0	JC14857-22A	NICKEL	U	12.9	12.9	4.7		
135-BB36A-13.5-14.0	JC14857-22A	POTASSIUM	U	953B	953	1200	Qualify	2
135-BB36A-13.5-14.0	JC14857-22A	SELENIUM	U	0.48B	0.48	2.3	Qualify	2
135-BB36A-13.5-14.0	JC14857-22A	SILVER	U	0.32B	0.32	0.58	Qualify	2
135-BB36A-13.5-14.0	JC14857-22A	SODIUM	U	1370	1370	1200		
135-BB36A-13.5-14.0	JC14857-22A	VANADIUM	U	21.6	21.6	5.8		
135-BB36A-13.5-14.0	JC14857-22A	ZINC	U	83.6	83.6	5.8	Qualify	6,8
135-BB36A-14.0-14.5	JC14857-23A	ALUMINUM	U	9390	9390	49	Qualify	4,7
135-BB36A-14.0-14.5	JC14857-23A	ANTIMONY	U	U	U	2.0	Qualify	3,7
135-BB36A-14.0-14.5	JC14857-23A	ARSENIC	U	5.3	5.3	2.0	Qualify	7
135-BB36A-14.0-14.5	JC14857-23A	BARIUM	U	36.6	36.6	20	Qualify	6,7,8
135-BB36A-14.0-14.5	JC14857-23A	BERYLLIUM	U	0.23	0.23	0.20	Qualify	7
135-BB36A-14.0-14.5	JC14857-23A	CADMIUM	U	0.089B	0.089	0.49	Qualify	2,7
135-BB36A-14.0-14.5	JC14857-23A	CALCIUM METAL	U	3270	3270	490	Qualify	4,6,7
135-BB36A-14.0-14.5	JC14857-23A	CHROMIUM	U	22.7	22.7	0.99	Qualify	7
135-BB36A-14.0-14.5	JC14857-23A	COBALT	U	2.8B	2.8	4.9	Qualify	2,7
135-BB36A-14.0-14.5	JC14857-23A	COPPER	U	8.0	8.0	2.5	Qualify	3,7
135-BB36A-14.0-14.5	JC14857-23A	IRON	U	7920	7920	49	Qualify	7
135-BB36A-14.0-14.5	JC14857-23A	LEAD	U	20.5	20.5	2.0	Qualify	3,6,7
135-BB36A-14.0-14.5	JC14857-23A	MAGNESIUM	U	3530	3530	490	Qualify	7
135-BB36A-14.0-14.5	JC14857-23A	MANGANESE	U	74.9	74.9	1.5	Qualify	7,8
135-BB36A-14.0-14.5	JC14857-23A	NICKEL	U	9.7	9.7	4.0	Qualify	7

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-BB36A-14.0-14.5	JC14857-23A	POTASSIUM	U	2090	2090	990	Qualify	7
135-BB36A-14.0-14.5	JC14857-23A	SELENIUM	U	0.29B	0.29	2.0	Qualify	2,7
135-BB36A-14.0-14.5	JC14857-23A	SILVER	U	U	U	0.49	Qualify	7
135-BB36A-14.0-14.5	JC14857-23A	SODIUM	U	6750	6750	990	Qualify	7
135-BB36A-14.0-14.5	JC14857-23A	THALLIUM	U	U	U	0.99	Qualify	7
135-BB36A-14.0-14.5	JC14857-23A	VANADIUM	U	30.7	30.7	4.9	Qualify	7
135-BB36A-14.0-14.5	JC14857-23A	ZINC	U	17.0	17.0	4.9	Qualify	6,7,8
135-BB36A-3.5-4.0	JC14857-24A	ALUMINUM	U	5170	5170	60	Qualify	4
135-BB36A-3.5-4.0	JC14857-24A	ANTIMONY	U	0.68B	0.68	2.4	Qualify	2,3
135-BB36A-3.5-4.0	JC14857-24A	ARSENIC	U	5.8	5.8	2.4		
135-BB36A-3.5-4.0	JC14857-24A	BARIUM	U	81.6	81.6	24	Qualify	6,8
135-BB36A-3.5-4.0	JC14857-24A	BERYLLIUM	U	0.16B	0.16	0.24	Qualify	2
135-BB36A-3.5-4.0	JC14857-24A	CADMIUM	U	0.22B	0.22	0.60	Qualify	2
135-BB36A-3.5-4.0	JC14857-24A	CALCIUM METAL	U	3730	3730	600	Qualify	4,6
135-BB36A-3.5-4.0	JC14857-24A	CHROMIUM	U	12.3	12.3	1.2		
135-BB36A-3.5-4.0	JC14857-24A	COBALT	U	4.2B	4.2	6.0	Qualify	2
135-BB36A-3.5-4.0	JC14857-24A	COPPER	U	30.7	30.7	3.0	Qualify	3
135-BB36A-3.5-4.0	JC14857-24A	IRON	U	10500	10500	60		
135-BB36A-3.5-4.0	JC14857-24A	LEAD	U	463	463	2.4	Qualify	3,6
135-BB36A-3.5-4.0	JC14857-24A	MAGNESIUM	U	1960	1960	600		
135-BB36A-3.5-4.0	JC14857-24A	MANGANESE	U	246	246	1.8	Qualify	8
135-BB36A-3.5-4.0	JC14857-24A	NICKEL	U	9.9	9.9	4.8		
135-BB36A-3.5-4.0	JC14857-24A	POTASSIUM	U	854B	854	1200	Qualify	2
135-BB36A-3.5-4.0	JC14857-24A	SILVER	U	0.24B	0.24	0.60	Qualify	2
135-BB36A-3.5-4.0	JC14857-24A	SODIUM	U	181B	181	1200	Qualify	1,2

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135-BB36A-3.5-4.0	JC14857-24A	VANADIUM	U	19.3	19.3	6.0		
135-BB36A-3.5-4.0	JC14857-24A	ZINC	U	226	226	6.0	Qualify	6,8
135-BB36A-5.5-6.0	JC14857-25A	ALUMINUM	U	11200	11200	58	Qualify	4
135-BB36A-5.5-6.0	JC14857-25A	ANTIMONY	U	0.76B	0.76	2.3	Qualify	2,3
135-BB36A-5.5-6.0	JC14857-25A	ARSENIC	U	5.8	5.8	2.3		
135-BB36A-5.5-6.0	JC14857-25A	BARIUM	U	58.2	58.2	23	Qualify	6,8
135-BB36A-5.5-6.0	JC14857-25A	BERYLLIUM	U	0.41	0.41	0.23		
135-BB36A-5.5-6.0	JC14857-25A	CADMIUM	U	0.15B	0.15	0.58	Qualify	2
135-BB36A-5.5-6.0	JC14857-25A	CALCIUM METAL	U	2240	2240	580	Qualify	4,6
135-BB36A-5.5-6.0	JC14857-25A	CHROMIUM	U	20.2	20.2	1.2		
135-BB36A-5.5-6.0	JC14857-25A	COBALT	U	7.7	7.7	5.8		
135-BB36A-5.5-6.0	JC14857-25A	COPPER	U	17.8	17.8	2.9	Qualify	3
135-BB36A-5.5-6.0	JC14857-25A	IRON	U	14600	14600	58		
135-BB36A-5.5-6.0	JC14857-25A	LEAD	U	62.8	62.8	2.3	Qualify	3,6
135-BB36A-5.5-6.0	JC14857-25A	MAGNESIUM	U	4860	4860	580		
135-BB36A-5.5-6.0	JC14857-25A	MANGANESE	U	329	329	1.7	Qualify	8
135-BB36A-5.5-6.0	JC14857-25A	NICKEL	U	15.5	15.5	4.6		
135-BB36A-5.5-6.0	JC14857-25A	POTASSIUM	U	2300	2300	1200		
135-BB36A-5.5-6.0	JC14857-25A	SILVER	U	0.31B	0.31	0.58	Qualify	2
135-BB36A-5.5-6.0	JC14857-25A	SODIUM	U	199B	199	1200	Qualify	1,2
135-BB36A-5.5-6.0	JC14857-25A	VANADIUM	U	39.5	39.5	5.8		
135-BB36A-5.5-6.0	JC14857-25A	ZINC	U	100	100	5.8	Qualify	6,8
135-BB36A-7.5-8.0	JC14857-26A	ALUMINUM	U	10500	10500	57	Qualify	4
135-BB36A-7.5-8.0	JC14857-26A	ANTIMONY	U	0.76B	0.76	2.3	Qualify	2,3
135-BB36A-7.5-8.0	JC14857-26A	ARSENIC	U	5.6	5.6	2.3		

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135-BB36A-7.5-8.0	JC14857-26A	BARIUM	U	59.8	59.8	23	Qualify	6,8
135-BB36A-7.5-8.0	JC14857-26A	BERYLLIUM	U	0.23	0.23	0.23		
135-BB36A-7.5-8.0	JC14857-26A	CADMIUM	U	0.11B	0.11	0.57	Qualify	2
135-BB36A-7.5-8.0	JC14857-26A	CALCIUM METAL	U	1630	1630	570	Qualify	4,6
135-BB36A-7.5-8.0	JC14857-26A	CHROMIUM	U	16.2	16.2	1.1		
135-BB36A-7.5-8.0	JC14857-26A	COBALT	U	6.8	6.8	5.7		
135-BB36A-7.5-8.0	JC14857-26A	COPPER	U	13.1	13.1	2.9	Qualify	3
135-BB36A-7.5-8.0	JC14857-26A	IRON	U	12900	12900	57		
135-BB36A-7.5-8.0	JC14857-26A	LEAD	U	22.6	22.6	2.3	Qualify	3,6
135-BB36A-7.5-8.0	JC14857-26A	MAGNESIUM	U	3820	3820	570		
135-BB36A-7.5-8.0	JC14857-26A	MANGANESE	U	219	219	1.7	Qualify	8
135-BB36A-7.5-8.0	JC14857-26A	NICKEL	U	12.6	12.6	4.6		
135-BB36A-7.5-8.0	JC14857-26A	POTASSIUM	U	1570	1570	1100		
135-BB36A-7.5-8.0	JC14857-26A	SILVER	U	0.27B	0.27	0.57	Qualify	2
135-BB36A-7.5-8.0	JC14857-26A	SODIUM	U	234B	234	1100	Qualify	1,2
135-BB36A-7.5-8.0	JC14857-26A	VANADIUM	U	29.7	29.7	5.7		
135-BB36A-7.5-8.0	JC14857-26A	ZINC	U	63.8	63.8	5.7	Qualify	6,8
135-BB36A-9.5-10.0	JC14857-27A	ALUMINUM	U	8630	8630	45	Qualify	4
135-BB36A-9.5-10.0	JC14857-27A	ANTIMONY	U	0.79B	0.79	1.8	Qualify	2,3
135-BB36A-9.5-10.0	JC14857-27A	ARSENIC	U	4.3	4.3	1.8		
135-BB36A-9.5-10.0	JC14857-27A	BARIUM	U	48.8	48.8	18	Qualify	6,8
135-BB36A-9.5-10.0	JC14857-27A	BERYLLIUM	U	0.16B	0.16	0.18	Qualify	2
135-BB36A-9.5-10.0	JC14857-27A	CADMIUM	U	0.26B	0.26	0.45	Qualify	2
135-BB36A-9.5-10.0	JC14857-27A	CALCIUM METAL	U	2000	2000	450	Qualify	4,6
135-BB36A-9.5-10.0	JC14857-27A	CHROMIUM	U	18.7	18.7	0.90		

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135-BB36A-9.5-10.0	JC14857-27A	COBALT	U	6.2	6.2	4.5		
135-BB36A-9.5-10.0	JC14857-27A	COPPER	U	15.3	15.3	2.2	Qualify	3
135-BB36A-9.5-10.0	JC14857-27A	IRON	U	12200	12200	45		
135-BB36A-9.5-10.0	JC14857-27A	LEAD	U	26.4	26.4	1.8	Qualify	3,6
135-BB36A-9.5-10.0	JC14857-27A	MAGNESIUM	U	4400	4400	450		
135-BB36A-9.5-10.0	JC14857-27A	MANGANESE	U	331	331	1.3	Qualify	8
135-BB36A-9.5-10.0	JC14857-27A	NICKEL	U	12.0	12.0	3.6		
135-BB36A-9.5-10.0	JC14857-27A	POTASSIUM	U	1570	1570	900		
135-BB36A-9.5-10.0	JC14857-27A	SILVER	U	0.27B	0.27	0.45	Qualify	2
135-BB36A-9.5-10.0	JC14857-27A	SODIUM	U	372B	372	900	Qualify	1,2
135-BB36A-9.5-10.0	JC14857-27A	THALLIUM	U	0.19B	0.19	0.90	Qualify	2
135-BB36A-9.5-10.0	JC14857-27A	VANADIUM	U	35.4	35.4	4.5		
135-BB36A-9.5-10.0	JC14857-27A	ZINC	U	73.4	73.4	4.5	Qualify	6,8
135-CC28A-10.0-10.5	JC14857-28A	ALUMINUM	U	5470	5470	49	Qualify	4
135-CC28A-10.0-10.5	JC14857-28A	ANTIMONY	U	0.79B	0.79	2.0	Qualify	2,3
135-CC28A-10.0-10.5	JC14857-28A	ARSENIC	U	9.6	9.6	2.0		
135-CC28A-10.0-10.5	JC14857-28A	BARIUM	U	168	168	20	Qualify	6,8
135-CC28A-10.0-10.5	JC14857-28A	BERYLLIUM	U	0.41	0.41	0.20		
135-CC28A-10.0-10.5	JC14857-28A	CADMIUM	U	0.23B	0.23	0.49	Qualify	2
135-CC28A-10.0-10.5	JC14857-28A	CALCIUM METAL	U	3320	3320	490	Qualify	4,6
135-CC28A-10.0-10.5	JC14857-28A	CHROMIUM	U	15.5	15.5	0.99		
135-CC28A-10.0-10.5	JC14857-28A	COBALT	U	6.0	6.0	4.9		
135-CC28A-10.0-10.5	JC14857-28A	COPPER	U	70.3	70.3	2.5	Qualify	3
135-CC28A-10.0-10.5	JC14857-28A	IRON	U	5620	5620	49		
135-CC28A-10.0-10.5	JC14857-28A	LEAD	U	280	280	2.0	Qualify	3,6

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135-CC28A-10.0-10.5	JC14857-28A	MAGNESIUM	U	410B	410	490	Qualify	2
135-CC28A-10.0-10.5	JC14857-28A	MANGANESE	U	83.7	83.7	1.5	Qualify	8
135-CC28A-10.0-10.5	JC14857-28A	NICKEL	U	15.5	15.5	3.9		
135-CC28A-10.0-10.5	JC14857-28A	POTASSIUM	U	758B	758	990	Qualify	2
135-CC28A-10.0-10.5	JC14857-28A	SELENIUM	U	1.8B	1.8	2.0	Qualify	2
135-CC28A-10.0-10.5	JC14857-28A	SILVER	U	0.50	0.50	0.49		
135-CC28A-10.0-10.5	JC14857-28A	SODIUM	U	553B	553	990	Qualify	2
135-CC28A-10.0-10.5	JC14857-28A	VANADIUM	U	32.2	32.2	4.9		
135-CC28A-10.0-10.5	JC14857-28A	ZINC	U	96.6	96.6	4.9	Qualify	6,8
135-CC28A-10.0-10.5X	JC14857-29A	ALUMINUM	U	6210	6210	50	Qualify	4
135-CC28A-10.0-10.5X	JC14857-29A	ANTIMONY	U	1.5B	1.5	2.0	Qualify	2,3
135-CC28A-10.0-10.5X	JC14857-29A	ARSENIC	U	9.4	9.4	2.0		
135-CC28A-10.0-10.5X	JC14857-29A	BARIUM	U	157	157	20	Qualify	6,8
135-CC28A-10.0-10.5X	JC14857-29A	BERYLLIUM	U	0.47	0.47	0.20		
135-CC28A-10.0-10.5X	JC14857-29A	CADMIUM	U	0.23B	0.23	0.50	Qualify	2
135-CC28A-10.0-10.5X	JC14857-29A	CALCIUM METAL	U	4030	4030	500	Qualify	4,6
135-CC28A-10.0-10.5X	JC14857-29A	CHROMIUM	U	15.1	15.1	0.99		
135-CC28A-10.0-10.5X	JC14857-29A	COBALT	U	7.5	7.5	5.0		
135-CC28A-10.0-10.5X	JC14857-29A	COPPER	U	34.8	34.8	2.5	Qualify	3
135-CC28A-10.0-10.5X	JC14857-29A	IRON	U	7030	7030	50		
135-CC28A-10.0-10.5X	JC14857-29A	LEAD	U	200	200	2.0	Qualify	3,6
135-CC28A-10.0-10.5X	JC14857-29A	MAGNESIUM	U	499B	499	500	Qualify	2
135-CC28A-10.0-10.5X	JC14857-29A	MANGANESE	U	132	132	1.5	Qualify	8
135-CC28A-10.0-10.5X	JC14857-29A	NICKEL	U	18.1	18.1	4.0		
135-CC28A-10.0-10.5X	JC14857-29A	POTASSIUM	U	792B	792	990	Qualify	2

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135-CC28A-10.0-10.5X	JC14857-29A	SELENIUM	U	1.8B	1.8	2.0	Qualify	2
135-CC28A-10.0-10.5X	JC14857-29A	SILVER	U	0.39B	0.39	0.50	Qualify	2
135-CC28A-10.0-10.5X	JC14857-29A	SODIUM	U	474B	474	990	Qualify	1,2
135-CC28A-10.0-10.5X	JC14857-29A	VANADIUM	U	33.1	33.1	5.0		
135-CC28A-10.0-10.5X	JC14857-29A	ZINC	U	107	107	5.0	Qualify	6,8
135-CC28A-12.0-12.5	JC14857-30A	ALUMINUM	U	7480	7480	71	Qualify	4
135-CC28A-12.0-12.5	JC14857-30A	ANTIMONY	U	1.8B	1.8	2.8	Qualify	2,3
135-CC28A-12.0-12.5	JC14857-30A	ARSENIC	U	16.2	16.2	2.8		
135-CC28A-12.0-12.5	JC14857-30A	BARIUM	U	420	420	28	Qualify	6,8
135-CC28A-12.0-12.5	JC14857-30A	BERYLLIUM	U	0.42	0.42	0.28		
135-CC28A-12.0-12.5	JC14857-30A	CADMIUM	U	0.37B	0.37	0.71	Qualify	2
135-CC28A-12.0-12.5	JC14857-30A	CALCIUM METAL	U	9240	9240	710	Qualify	4,6
135-CC28A-12.0-12.5	JC14857-30A	CHROMIUM	U	32.2	32.2	1.4		
135-CC28A-12.0-12.5	JC14857-30A	COBALT	U	7.2	7.2	7.1		
135-CC28A-12.0-12.5	JC14857-30A	COPPER	U	165	165	3.5	Qualify	3
135-CC28A-12.0-12.5	JC14857-30A	IRON	U	27500	27500	71		
135-CC28A-12.0-12.5	JC14857-30A	LEAD	U	793	793	2.8	Qualify	3,6
135-CC28A-12.0-12.5	JC14857-30A	MAGNESIUM	U	760	760	710		
135-CC28A-12.0-12.5	JC14857-30A	MANGANESE	U	300	300	2.1	Qualify	8
135-CC28A-12.0-12.5	JC14857-30A	NICKEL	U	17.8	17.8	5.7		
135-CC28A-12.0-12.5	JC14857-30A	POTASSIUM	U	1130B	1130	1400	Qualify	2
135-CC28A-12.0-12.5	JC14857-30A	SELENIUM	U	2.2B	2.2	2.8	Qualify	2
135-CC28A-12.0-12.5	JC14857-30A	SILVER	U	2.5	2.5	0.71		
135-CC28A-12.0-12.5	JC14857-30A	SODIUM	U	592B	592	1400	Qualify	2
135-CC28A-12.0-12.5	JC14857-30A	VANADIUM	U	33.4	33.4	7.1		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-CC28A-12.0-12.5	JC14857-30A	ZINC	U	227	227	7.1	Qualify	6,8
135-CC28A-14.0-14.5	JC14857-31A	ALUMINUM	U	4690	4690	63	Qualify	4
135-CC28A-14.0-14.5	JC14857-31A	ANTIMONY	U	2.5	2.5	2.5	Qualify	3
135-CC28A-14.0-14.5	JC14857-31A	ARSENIC	U	16.2	16.2	2.5		
135-CC28A-14.0-14.5	JC14857-31A	BARIUM	U	276	276	25	Qualify	6,8
135-CC28A-14.0-14.5	JC14857-31A	BERYLLIUM	U	0.23B	0.23	0.25	Qualify	2
135-CC28A-14.0-14.5	JC14857-31A	CADMIUM	U	1.3	1.3	0.63		
135-CC28A-14.0-14.5	JC14857-31A	CALCIUM METAL	U	6810	6810	630	Qualify	4,6
135-CC28A-14.0-14.5	JC14857-31A	CHROMIUM	U	12.6	12.6	1.3		
135-CC28A-14.0-14.5	JC14857-31A	COBALT	U	3.7B	3.7	6.3	Qualify	2
135-CC28A-14.0-14.5	JC14857-31A	COPPER	U	72.7	72.7	3.1	Qualify	3
135-CC28A-14.0-14.5	JC14857-31A	IRON	U	9590	9590	63		
135-CC28A-14.0-14.5	JC14857-31A	LEAD	U	734	734	2.5	Qualify	3,6
135-CC28A-14.0-14.5	JC14857-31A	MAGNESIUM	U	812	812	630		
135-CC28A-14.0-14.5	JC14857-31A	MANGANESE	U	141	141	1.9	Qualify	8
135-CC28A-14.0-14.5	JC14857-31A	NICKEL	U	14.4	14.4	5.0		
135-CC28A-14.0-14.5	JC14857-31A	POTASSIUM	U	780B	780	1300	Qualify	2
135-CC28A-14.0-14.5	JC14857-31A	SELENIUM	U	6.2	6.2	2.5		
135-CC28A-14.0-14.5	JC14857-31A	SILVER	U	3.0	3.0	0.63		
135-CC28A-14.0-14.5	JC14857-31A	SODIUM	U	770B	770	1300	Qualify	2
135-CC28A-14.0-14.5	JC14857-31A	VANADIUM	U	16.5	16.5	6.3		
135-CC28A-14.0-14.5	JC14857-31A	ZINC	U	528	528	6.3	Qualify	6,8
135-CC28A-16.0-16.5	JC14857-32A	ALUMINUM	U	7220	7220	50	Qualify	4
135-CC28A-16.0-16.5	JC14857-32A	ANTIMONY	U	2.1	2.1	2.0	Qualify	3
135-CC28A-16.0-16.5	JC14857-32A	ARSENIC	U	30.8	30.8	2.0		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-CC28A-16.0-16.5	JC14857-32A	BARIUM	U	632	632	20	Qualify	6,8
135-CC28A-16.0-16.5	JC14857-32A	BERYLLIUM	U	0.33	0.33	0.20		
135-CC28A-16.0-16.5	JC14857-32A	CADMIUM	U	1.6	1.6	0.50		
135-CC28A-16.0-16.5	JC14857-32A	CALCIUM METAL	U	15700	15700	500	Qualify	4,6
135-CC28A-16.0-16.5	JC14857-32A	CHROMIUM	U	38.9	38.9	1.0		
135-CC28A-16.0-16.5	JC14857-32A	COBALT	U	6.4	6.4	5.0		
135-CC28A-16.0-16.5	JC14857-32A	COPPER	U	184	184	2.5	Qualify	3
135-CC28A-16.0-16.5	JC14857-32A	IRON	U	16100	16100	50		
135-CC28A-16.0-16.5	JC14857-32A	LEAD	U	1150	1150	4.0	Qualify	3,6
135-CC28A-16.0-16.5	JC14857-32A	MAGNESIUM	U	2080	2080	500		
135-CC28A-16.0-16.5	JC14857-32A	MANGANESE	U	260	260	1.5	Qualify	8
135-CC28A-16.0-16.5	JC14857-32A	NICKEL	U	18.9	18.9	4.0		
135-CC28A-16.0-16.5	JC14857-32A	POTASSIUM	U	1330	1330	1000		
135-CC28A-16.0-16.5	JC14857-32A	SELENIUM	U	8.8	8.8	2.0		
135-CC28A-16.0-16.5	JC14857-32A	SILVER	U	2.0	2.0	0.50		
135-CC28A-16.0-16.5	JC14857-32A	SODIUM	U	1290	1290	1000		
135-CC28A-16.0-16.5	JC14857-32A	VANADIUM	U	22.6	22.6	5.0		
135-CC28A-16.0-16.5	JC14857-32A	ZINC	U	889	889	5.0	Qualify	6,8
135-CC28A-18.0-18.5	JC14857-33A	ALUMINUM	U	5270	5270	90	Qualify	4
135-CC28A-18.0-18.5	JC14857-33A	ANTIMONY	U	2.5B	2.5	3.6	Qualify	2,3
135-CC28A-18.0-18.5	JC14857-33A	ARSENIC	U	14.7	14.7	3.6		
135-CC28A-18.0-18.5	JC14857-33A	BARIUM	U	459	459	36	Qualify	6,8
135-CC28A-18.0-18.5	JC14857-33A	BERYLLIUM	U	0.25B	0.25	0.36	Qualify	2
135-CC28A-18.0-18.5	JC14857-33A	CADMIUM	U	0.63B	0.63	0.90	Qualify	2
135-CC28A-18.0-18.5	JC14857-33A	CALCIUM METAL	U	17100	17100	900	Qualify	4,6

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-CC28A-18.0-18.5	JC14857-33A	CHROMIUM	U	26.3	26.3	1.8		
135-CC28A-18.0-18.5	JC14857-33A	COBALT	U	5.0B	5.0	9.0	Qualify	2
135-CC28A-18.0-18.5	JC14857-33A	COPPER	U	72.2	72.2	4.5	Qualify	3
135-CC28A-18.0-18.5	JC14857-33A	IRON	U	24400	24400	90		
135-CC28A-18.0-18.5	JC14857-33A	LEAD	U	1440	1440	3.6	Qualify	3,6
135-CC28A-18.0-18.5	JC14857-33A	MAGNESIUM	U	1340	1340	900		
135-CC28A-18.0-18.5	JC14857-33A	MANGANESE	U	281	281	2.7	Qualify	8
135-CC28A-18.0-18.5	JC14857-33A	NICKEL	U	14.3	14.3	7.2		
135-CC28A-18.0-18.5	JC14857-33A	POTASSIUM	U	990B	990	1800	Qualify	2
135-CC28A-18.0-18.5	JC14857-33A	SELENIUM	U	3.9	3.9	3.6		
135-CC28A-18.0-18.5	JC14857-33A	SILVER	U	1.3	1.3	0.90		
135-CC28A-18.0-18.5	JC14857-33A	SODIUM	U	1210B	1210	1800	Qualify	2
135-CC28A-18.0-18.5	JC14857-33A	VANADIUM	U	19.0	19.0	9.0		
135-CC28A-18.0-18.5	JC14857-33A	ZINC	U	909	909	9.0	Qualify	6,8
135-CC28A-18.5-19.0	JC14857-34A	ALUMINUM	U	11500	11500	48	Qualify	4
135-CC28A-18.5-19.0	JC14857-34A	ANTIMONY	U	U	U	3.8	Qualify	3
135-CC28A-18.5-19.0	JC14857-34A	ARSENIC	U	20.5	20.5	1.9		
135-CC28A-18.5-19.0	JC14857-34A	BARIUM	U	141	141	19	Qualify	6,8
135-CC28A-18.5-19.0	JC14857-34A	BERYLLIUM	U	0.33	0.33	0.19		
135-CC28A-18.5-19.0	JC14857-34A	CADMIUM	U	0.97	0.97	0.96		
135-CC28A-18.5-19.0	JC14857-34A	CALCIUM METAL	U	4440	4440	480	Qualify	4,6
135-CC28A-18.5-19.0	JC14857-34A	CHROMIUM	U	30.6	30.6	0.96		
135-CC28A-18.5-19.0	JC14857-34A	COBALT	U	11.1	11.1	4.8		
135-CC28A-18.5-19.0	JC14857-34A	COPPER	U	424	424	4.8	Qualify	3
135-CC28A-18.5-19.0	JC14857-34A	IRON	U	70300	70300	240		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-CC28A-18.5-19.0	JC14857-34A	LEAD	U	288	288	9.6	Qualify	3,6
135-CC28A-18.5-19.0	JC14857-34A	MAGNESIUM	U	4040	4040	480		
135-CC28A-18.5-19.0	JC14857-34A	MANGANESE	U	1140	1140	2.9	Qualify	8
135-CC28A-18.5-19.0	JC14857-34A	NICKEL	U	22.2	22.2	3.8		
135-CC28A-18.5-19.0	JC14857-34A	POTASSIUM	U	1890	1890	960		
135-CC28A-18.5-19.0	JC14857-34A	SILVER	U	2.2B	2.2	2.4	Qualify	2
135-CC28A-18.5-19.0	JC14857-34A	SODIUM	U	1870	1870	960		
135-CC28A-18.5-19.0	JC14857-34A	VANADIUM	U	38.3	38.3	4.8		
135-CC28A-18.5-19.0	JC14857-34A	ZINC	U	497	497	4.8	Qualify	6,8
135-CC28A-19.0-19.5	JC14857-35A	ALUMINUM	U	10800	10800	49	Qualify	4,7
135-CC28A-19.0-19.5	JC14857-35A	ANTIMONY	U	U	U	2.0	Qualify	3,7
135-CC28A-19.0-19.5	JC14857-35A	ARSENIC	U	3.8	3.8	2.0	Qualify	7
135-CC28A-19.0-19.5	JC14857-35A	BARIUM	U	35.6	35.6	20	Qualify	6,7,8
135-CC28A-19.0-19.5	JC14857-35A	BERYLLIUM	U	0.40	0.40	0.20	Qualify	7
135-CC28A-19.0-19.5	JC14857-35A	CADMIUM	U	0.098B	0.098	0.49	Qualify	2,7
135-CC28A-19.0-19.5	JC14857-35A	CALCIUM METAL	U	3070	3070	490	Qualify	4,6,7
135-CC28A-19.0-19.5	JC14857-35A	CHROMIUM	U	18.2	18.2	0.98	Qualify	7
135-CC28A-19.0-19.5	JC14857-35A	COBALT	U	6.9	6.9	4.9	Qualify	7
135-CC28A-19.0-19.5	JC14857-35A	COPPER	U	8.8	8.8	2.5	Qualify	3,7
135-CC28A-19.0-19.5	JC14857-35A	IRON	U	10600	10600	49	Qualify	7
135-CC28A-19.0-19.5	JC14857-35A	LEAD	U	16.3	16.3	2.0	Qualify	3,6,7
135-CC28A-19.0-19.5	JC14857-35A	MAGNESIUM	U	4260	4260	490	Qualify	7
135-CC28A-19.0-19.5	JC14857-35A	MANGANESE	U	71.5	71.5	1.5	Qualify	7,8
135-CC28A-19.0-19.5	JC14857-35A	NICKEL	U	18.2	18.2	3.9	Qualify	7
135-CC28A-19.0-19.5	JC14857-35A	POTASSIUM	U	2630	2630	980	Qualify	7

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135-CC28A-19.0-19.5	JC14857-35A	SELENIUM	U	0.64B	0.64	2.0	Qualify	2,7
135-CC28A-19.0-19.5	JC14857-35A	SILVER	U	0.20B	0.20	0.49	Qualify	2,7
135-CC28A-19.0-19.5	JC14857-35A	SODIUM	U	7100	7100	980	Qualify	7
135-CC28A-19.0-19.5	JC14857-35A	THALLIUM	U	U	U	0.98	Qualify	7
135-CC28A-19.0-19.5	JC14857-35A	VANADIUM	U	28.1	28.1	4.9	Qualify	7
135-CC28A-19.0-19.5	JC14857-35A	ZINC	U	39.0	39.0	4.9	Qualify	6,7,8
135-CC31A-10.0-10.5	JC14857-1A	ALUMINUM	U	7720	7720	72	Qualify	4
135-CC31A-10.0-10.5	JC14857-1A	ANTIMONY	U	2.1B	2.1	2.9	Qualify	2,3
135-CC31A-10.0-10.5	JC14857-1A	ARSENIC	U	12.5	12.5	2.9		
135-CC31A-10.0-10.5	JC14857-1A	BARIUM	U	1020	1020	29	Qualify	6,8
135-CC31A-10.0-10.5	JC14857-1A	BERYLLIUM	U	0.46	0.46	0.29		
135-CC31A-10.0-10.5	JC14857-1A	CADMIUM	U	0.78	0.78	0.72		
135-CC31A-10.0-10.5	JC14857-1A	CALCIUM METAL	U	15100	15100	720	Qualify	8
135-CC31A-10.0-10.5	JC14857-1A	CHROMIUM	U	28.4	28.4	1.4		
135-CC31A-10.0-10.5	JC14857-1A	COBALT	U	7.8	7.8	7.2		
135-CC31A-10.0-10.5	JC14857-1A	COPPER	U	123	123	3.6		
135-CC31A-10.0-10.5	JC14857-1A	IRON	U	14500	14500	72		
135-CC31A-10.0-10.5	JC14857-1A	LEAD	U	1960	1960	5.8	Qualify	6,8
135-CC31A-10.0-10.5	JC14857-1A	MAGNESIUM	U	1070	1070	720		
135-CC31A-10.0-10.5	JC14857-1A	MANGANESE	U	238	238	2.2	Qualify	6,8
135-CC31A-10.0-10.5	JC14857-1A	NICKEL	U	19.4	19.4	5.8		
135-CC31A-10.0-10.5	JC14857-1A	POTASSIUM	U	1150B	1150	1400	Qualify	2
135-CC31A-10.0-10.5	JC14857-1A	SELENIUM	U	2.6B	2.6	2.9	Qualify	2
135-CC31A-10.0-10.5	JC14857-1A	SILVER	U	1.1	1.1	0.72		
135-CC31A-10.0-10.5	JC14857-1A	SODIUM	U	999B	999	1400	Qualify	2

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-CC31A-10.0-10.5	JC14857-1A	THALLIUM	U	0.61B	0.61	1.4	Qualify	2
135-CC31A-10.0-10.5	JC14857-1A	VANADIUM	U	22.9	22.9	7.2		
135-CC31A-10.0-10.5	JC14857-1A	ZINC	U	486	486	7.2	Qualify	6,8
135-CC31A-12.0-12.5	JC14857-2A	ALUMINUM	U	7370	7370	66	Qualify	4
135-CC31A-12.0-12.5	JC14857-2A	ANTIMONY	U	1.6B	1.6	2.7	Qualify	2,3
135-CC31A-12.0-12.5	JC14857-2A	ARSENIC	U	15.2	15.2	2.7		
135-CC31A-12.0-12.5	JC14857-2A	BARIUM	U	338	338	27	Qualify	6,8
135-CC31A-12.0-12.5	JC14857-2A	BERYLLIUM	U	0.48	0.48	0.27		
135-CC31A-12.0-12.5	JC14857-2A	CADMIUM	U	1.0	1.0	0.66		
135-CC31A-12.0-12.5	JC14857-2A	CALCIUM METAL	U	6340	6340	660	Qualify	8
135-CC31A-12.0-12.5	JC14857-2A	CHROMIUM	U	19.5	19.5	1.3		
135-CC31A-12.0-12.5	JC14857-2A	COBALT	U	24.9	24.9	6.6		
135-CC31A-12.0-12.5	JC14857-2A	COPPER	U	1450	1450	6.6		
135-CC31A-12.0-12.5	JC14857-2A	IRON	U	12300	12300	66		
135-CC31A-12.0-12.5	JC14857-2A	LEAD	U	669	669	2.7	Qualify	6,8
135-CC31A-12.0-12.5	JC14857-2A	MAGNESIUM	U	741	741	660		
135-CC31A-12.0-12.5	JC14857-2A	MANGANESE	U	160	160	2.0	Qualify	6,8
135-CC31A-12.0-12.5	JC14857-2A	NICKEL	U	27.8	27.8	5.3		
135-CC31A-12.0-12.5	JC14857-2A	POTASSIUM	U	1260B	1260	1300	Qualify	2
135-CC31A-12.0-12.5	JC14857-2A	SELENIUM	U	2.7	2.7	2.7		
135-CC31A-12.0-12.5	JC14857-2A	SILVER	U	0.68	0.68	0.66		
135-CC31A-12.0-12.5	JC14857-2A	SODIUM	U	909B	909	1300	Qualify	2
135-CC31A-12.0-12.5	JC14857-2A	THALLIUM	U	0.56B	0.56	1.3	Qualify	2
135-CC31A-12.0-12.5	JC14857-2A	VANADIUM	U	30.4	30.4	6.6		
135-CC31A-12.0-12.5	JC14857-2A	ZINC	U	1290	1290	13	Qualify	6,8

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-CC31A-14.0-14.5	JC14857-3A	ALUMINUM	U	10900	10900	85	Qualify	4,7
135-CC31A-14.0-14.5	JC14857-3A	ANTIMONY	U	1.7B	1.7	3.4	Qualify	2,3,7
135-CC31A-14.0-14.5	JC14857-3A	ARSENIC	U	13.9	13.9	3.4	Qualify	7
135-CC31A-14.0-14.5	JC14857-3A	BARIUM	U	149	149	34	Qualify	6,7,8
135-CC31A-14.0-14.5	JC14857-3A	BERYLLIUM	U	0.75	0.75	0.34	Qualify	7
135-CC31A-14.0-14.5	JC14857-3A	CADMIUM	U	1.1	1.1	0.85	Qualify	7
135-CC31A-14.0-14.5	JC14857-3A	CALCIUM METAL	U	4740	4740	850	Qualify	7,8
135-CC31A-14.0-14.5	JC14857-3A	CHROMIUM	U	23.2	23.2	1.7	Qualify	7
135-CC31A-14.0-14.5	JC14857-3A	COBALT	U	7.8B	7.8	8.5	Qualify	2,7
135-CC31A-14.0-14.5	JC14857-3A	COPPER	U	60.3	60.3	4.2	Qualify	7
135-CC31A-14.0-14.5	JC14857-3A	IRON	U	17800	17800	85	Qualify	7
135-CC31A-14.0-14.5	JC14857-3A	LEAD	U	401	401	3.4	Qualify	6,7,8
135-CC31A-14.0-14.5	JC14857-3A	MAGNESIUM	U	3790	3790	850	Qualify	7
135-CC31A-14.0-14.5	JC14857-3A	MANGANESE	U	228	228	2.5	Qualify	6,7,8
135-CC31A-14.0-14.5	JC14857-3A	NICKEL	U	17.5	17.5	6.8	Qualify	7
135-CC31A-14.0-14.5	JC14857-3A	POTASSIUM	U	2370	2370	1700	Qualify	7
135-CC31A-14.0-14.5	JC14857-3A	SELENIUM	U	0.97B	0.97	3.4	Qualify	2,7
135-CC31A-14.0-14.5	JC14857-3A	SILVER	U	0.34B	0.34	0.85	Qualify	2,7
135-CC31A-14.0-14.5	JC14857-3A	SODIUM	U	1810	1810	1700	Qualify	7
135-CC31A-14.0-14.5	JC14857-3A	THALLIUM	U	U	U	1.7	Qualify	7
135-CC31A-14.0-14.5	JC14857-3A	VANADIUM	U	34.1	34.1	8.5	Qualify	7
135-CC31A-14.0-14.5	JC14857-3A	ZINC	U	558	558	8.5	Qualify	6,7,8
135-CC31A-16.0-16.5	JC14857-4A	ALUMINUM	U	17900	17900	66	Qualify	4
135-CC31A-16.0-16.5	JC14857-4A	ANTIMONY	U	0.50B	0.50	2.6	Qualify	2,3
135-CC31A-16.0-16.5	JC14857-4A	ARSENIC	U	10.2	10.2	2.6		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-CC31A-16.0-16.5	JC14857-4A	BARIUM	U	63.4	63.4	26	Qualify	6,8
135-CC31A-16.0-16.5	JC14857-4A	BERYLLIUM	U	1.1	1.1	0.26		
135-CC31A-16.0-16.5	JC14857-4A	CADMIUM	U	0.49B	0.49	0.66	Qualify	2
135-CC31A-16.0-16.5	JC14857-4A	CALCIUM METAL	U	2840	2840	660	Qualify	8
135-CC31A-16.0-16.5	JC14857-4A	CHROMIUM	U	25.3	25.3	1.3		
135-CC31A-16.0-16.5	JC14857-4A	COBALT	U	11.1	11.1	6.6		
135-CC31A-16.0-16.5	JC14857-4A	COPPER	U	24.2	24.2	3.3		
135-CC31A-16.0-16.5	JC14857-4A	IRON	U	22200	22200	66		
135-CC31A-16.0-16.5	JC14857-4A	LEAD	U	35.2	35.2	2.6	Qualify	6,8
135-CC31A-16.0-16.5	JC14857-4A	MAGNESIUM	U	5130	5130	660		
135-CC31A-16.0-16.5	JC14857-4A	MANGANESE	U	516	516	2.0	Qualify	6,8
135-CC31A-16.0-16.5	JC14857-4A	NICKEL	U	19.9	19.9	5.3		
135-CC31A-16.0-16.5	JC14857-4A	POTASSIUM	U	2580	2580	1300		
135-CC31A-16.0-16.5	JC14857-4A	SELENIUM	U	0.61B	0.61	2.6	Qualify	2
135-CC31A-16.0-16.5	JC14857-4A	SODIUM	U	1400	1400	1300		
135-CC31A-16.0-16.5	JC14857-4A	VANADIUM	U	44.4	44.4	6.6		
135-CC31A-16.0-16.5	JC14857-4A	ZINC	U	99.1	99.1	6.6	Qualify	6,8
135-CC31A-16.5-17.0	JC14857-5A	ALUMINUM	U	14900	14900	140	Qualify	4,7
135-CC31A-16.5-17.0	JC14857-5A	ANTIMONY	U	U	U	5.4	Qualify	3,7
135-CC31A-16.5-17.0	JC14857-5A	ARSENIC	U	5.9	5.9	5.4	Qualify	7
135-CC31A-16.5-17.0	JC14857-5A	BARIUM	U	50.9B	50.9	54	Qualify	2,6,7,8
135-CC31A-16.5-17.0	JC14857-5A	BERYLLIUM	U	0.62	0.62	0.54	Qualify	7
135-CC31A-16.5-17.0	JC14857-5A	CADMIUM	U	0.32B	0.32	1.4	Qualify	2,7
135-CC31A-16.5-17.0	JC14857-5A	CALCIUM METAL	U	4090	4090	1400	Qualify	7,8
135-CC31A-16.5-17.0	JC14857-5A	CHROMIUM	U	27.2	27.2	2.7	Qualify	7

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-CC31A-16.5-17.0	JC14857-5A	COBALT	U	4.6B	4.6	14	Qualify	2,7
135-CC31A-16.5-17.0	JC14857-5A	COPPER	U	14.6	14.6	6.8	Qualify	7
135-CC31A-16.5-17.0	JC14857-5A	IRON	U	13000	13000	140	Qualify	7
135-CC31A-16.5-17.0	JC14857-5A	LEAD	U	21.6	21.6	5.4	Qualify	6,7,8
135-CC31A-16.5-17.0	JC14857-5A	MAGNESIUM	U	5390	5390	1400	Qualify	7
135-CC31A-16.5-17.0	JC14857-5A	MANGANESE	U	153	153	4.1	Qualify	6,7,8
135-CC31A-16.5-17.0	JC14857-5A	NICKEL	U	14.8	14.8	11	Qualify	7
135-CC31A-16.5-17.0	JC14857-5A	POTASSIUM	U	3540	3540	2700	Qualify	7
135-CC31A-16.5-17.0	JC14857-5A	SELENIUM	U	U	U	5.4	Qualify	7
135-CC31A-16.5-17.0	JC14857-5A	SILVER	U	U	U	1.4	Qualify	7
135-CC31A-16.5-17.0	JC14857-5A	SODIUM	U	9310	9310	2700	Qualify	7
135-CC31A-16.5-17.0	JC14857-5A	THALLIUM	U	U	U	2.7	Qualify	7
135-CC31A-16.5-17.0	JC14857-5A	VANADIUM	U	36.8	36.8	14	Qualify	7
135-CC31A-16.5-17.0	JC14857-5A	ZINC	U	61.2	61.2	14	Qualify	6,7,8
135-CC31A-2.0-2.5	JC14857-6A	ALUMINUM	U	8030	8030	58	Qualify	4
135-CC31A-2.0-2.5	JC14857-6A	ANTIMONY	U	50.0	50.0	12	Qualify	3
135-CC31A-2.0-2.5	JC14857-6A	ARSENIC	U	24.1	24.1	12		
135-CC31A-2.0-2.5	JC14857-6A	BARIUM	U	2790	2790	120	Qualify	6,8
135-CC31A-2.0-2.5	JC14857-6A	BERYLLIUM	U	0.68	0.68	0.23		
135-CC31A-2.0-2.5	JC14857-6A	CADMIUM	U	2.3	2.3	0.58		
135-CC31A-2.0-2.5	JC14857-6A	CALCIUM METAL	U	26600	26600	580	Qualify	8
135-CC31A-2.0-2.5	JC14857-6A	CHROMIUM	U	157	157	5.8		
135-CC31A-2.0-2.5	JC14857-6A	COBALT	U	8.0	8.0	5.8		
135-CC31A-2.0-2.5	JC14857-6A	COPPER	U	350	350	15		
135-CC31A-2.0-2.5	JC14857-6A	IRON	U	52300	52300	290		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-CC31A-2.0-2.5	JC14857-6A	LEAD	U	2680	2680	12	Qualify	6,8
135-CC31A-2.0-2.5	JC14857-6A	MAGNESIUM	U	2700	2700	580		
135-CC31A-2.0-2.5	JC14857-6A	MANGANESE	U	604	604	8.8	Qualify	6,8
135-CC31A-2.0-2.5	JC14857-6A	NICKEL	U	26.3	26.3	4.7		
135-CC31A-2.0-2.5	JC14857-6A	POTASSIUM	U	1810	1810	1200		
135-CC31A-2.0-2.5	JC14857-6A	SELENIUM	U	2.6B	2.6	12	Qualify	2
135-CC31A-2.0-2.5	JC14857-6A	SILVER	U	3.5	3.5	2.9		
135-CC31A-2.0-2.5	JC14857-6A	SODIUM	U	838B	838	1200	Qualify	2
135-CC31A-2.0-2.5	JC14857-6A	VANADIUM	U	26.7	26.7	5.8		
135-CC31A-2.0-2.5	JC14857-6A	ZINC	U	959	959	5.8	Qualify	6,8
135-CC31A-4.0-4.5	JC14857-7A	ALUMINUM	U	7200	7200	60	Qualify	4
135-CC31A-4.0-4.5	JC14857-7A	ANTIMONY	U	12.6	12.6	4.8	Qualify	3
135-CC31A-4.0-4.5	JC14857-7A	ARSENIC	U	25.0	25.0	4.8		
135-CC31A-4.0-4.5	JC14857-7A	BARIUM	U	5640	5640	240	Qualify	6,8
135-CC31A-4.0-4.5	JC14857-7A	BERYLLIUM	U	0.45	0.45	0.24		
135-CC31A-4.0-4.5	JC14857-7A	CADMIUM	U	4.1	4.1	0.60		
135-CC31A-4.0-4.5	JC14857-7A	CALCIUM METAL	U	7560	7560	600	Qualify	8
135-CC31A-4.0-4.5	JC14857-7A	CHROMIUM	U	71.8	71.8	2.4		
135-CC31A-4.0-4.5	JC14857-7A	COBALT	U	9.7	9.7	6.0		
135-CC31A-4.0-4.5	JC14857-7A	COPPER	U	1320	1320	6.0		
135-CC31A-4.0-4.5	JC14857-7A	IRON	U	52600	52600	120		
135-CC31A-4.0-4.5	JC14857-7A	LEAD	U	7970	7970	24	Qualify	6,8
135-CC31A-4.0-4.5	JC14857-7A	MAGNESIUM	U	1800	1800	600		
135-CC31A-4.0-4.5	JC14857-7A	MANGANESE	U	914	914	3.6	Qualify	6,8
135-CC31A-4.0-4.5	JC14857-7A	NICKEL	U	35.6	35.6	4.8		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-CC31A-4.0-4.5	JC14857-7A	POTASSIUM	U	1190B	1190	1200	Qualify	2
135-CC31A-4.0-4.5	JC14857-7A	SELENIUM	U	5.0	5.0	4.8		
135-CC31A-4.0-4.5	JC14857-7A	SILVER	U	3.9	3.9	1.2		
135-CC31A-4.0-4.5	JC14857-7A	SODIUM	U	858B	858	1200	Qualify	2
135-CC31A-4.0-4.5	JC14857-7A	VANADIUM	U	27.9	27.9	6.0		
135-CC31A-4.0-4.5	JC14857-7A	ZINC	U	1780	1780	12	Qualify	6,8
135-CC31A-6.0-6.5	JC14857-8A	ALUMINUM	U	7680	7680	72	Qualify	4
135-CC31A-6.0-6.5	JC14857-8A	ANTIMONY	U	7.8	7.8	2.9	Qualify	3
135-CC31A-6.0-6.5	JC14857-8A	ARSENIC	U	14.0	14.0	2.9		
135-CC31A-6.0-6.5	JC14857-8A	BARIUM	U	1070	1070	29	Qualify	6,8
135-CC31A-6.0-6.5	JC14857-8A	BERYLLIUM	U	0.54	0.54	0.29		
135-CC31A-6.0-6.5	JC14857-8A	CADMIUM	U	2.2	2.2	0.72		
135-CC31A-6.0-6.5	JC14857-8A	CALCIUM METAL	U	11100	11100	720	Qualify	8
135-CC31A-6.0-6.5	JC14857-8A	CHROMIUM	U	21.4	21.4	1.4		
135-CC31A-6.0-6.5	JC14857-8A	COBALT	U	6.8B	6.8	7.2	Qualify	2
135-CC31A-6.0-6.5	JC14857-8A	COPPER	U	93.8	93.8	3.6		
135-CC31A-6.0-6.5	JC14857-8A	IRON	U	17000	17000	72		
135-CC31A-6.0-6.5	JC14857-8A	LEAD	U	2080	2080	5.8	Qualify	6,8
135-CC31A-6.0-6.5	JC14857-8A	MAGNESIUM	U	1890	1890	720		
135-CC31A-6.0-6.5	JC14857-8A	MANGANESE	U	287	287	2.2	Qualify	6,8
135-CC31A-6.0-6.5	JC14857-8A	NICKEL	U	16.6	16.6	5.8		
135-CC31A-6.0-6.5	JC14857-8A	POTASSIUM	U	1130B	1130	1400	Qualify	2
135-CC31A-6.0-6.5	JC14857-8A	SELENIUM	U	1.4B	1.4	2.9	Qualify	2
135-CC31A-6.0-6.5	JC14857-8A	SILVER	U	0.68B	0.68	0.72	Qualify	2
135-CC31A-6.0-6.5	JC14857-8A	SODIUM	U	454B	454	1400	Qualify	1,2

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-CC31A-6.0-6.5	JC14857-8A	THALLIUM	U	0.72B	0.72	1.4	Qualify	2
135-CC31A-6.0-6.5	JC14857-8A	VANADIUM	U	25.8	25.8	7.2		
135-CC31A-6.0-6.5	JC14857-8A	ZINC	U	1760	1760	14	Qualify	6,8
135-CC31A-8.0-8.5	JC14857-9A	ALUMINUM	U	6030	6030	66	Qualify	4
135-CC31A-8.0-8.5	JC14857-9A	ANTIMONY	U	4.4	4.4	2.6	Qualify	3
135-CC31A-8.0-8.5	JC14857-9A	ARSENIC	U	14.2	14.2	2.6		
135-CC31A-8.0-8.5	JC14857-9A	BARIUM	U	147	147	26	Qualify	6,8
135-CC31A-8.0-8.5	JC14857-9A	BERYLLIUM	U	0.68	0.68	0.26		
135-CC31A-8.0-8.5	JC14857-9A	CADMIUM	U	1.2	1.2	0.66		
135-CC31A-8.0-8.5	JC14857-9A	CALCIUM METAL	U	7440	7440	660	Qualify	8
135-CC31A-8.0-8.5	JC14857-9A	CHROMIUM	U	13.6	13.6	1.3		
135-CC31A-8.0-8.5	JC14857-9A	COBALT	U	10.8	10.8	6.6		
135-CC31A-8.0-8.5	JC14857-9A	COPPER	U	1680	1680	6.6		
135-CC31A-8.0-8.5	JC14857-9A	IRON	U	21500	21500	66		
135-CC31A-8.0-8.5	JC14857-9A	LEAD	U	541	541	2.6	Qualify	6,8
135-CC31A-8.0-8.5	JC14857-9A	MAGNESIUM	U	565B	565	660	Qualify	2
135-CC31A-8.0-8.5	JC14857-9A	MANGANESE	U	178	178	2.0	Qualify	6,8
135-CC31A-8.0-8.5	JC14857-9A	NICKEL	U	22.3	22.3	5.2		
135-CC31A-8.0-8.5	JC14857-9A	POTASSIUM	U	788B	788	1300	Qualify	2
135-CC31A-8.0-8.5	JC14857-9A	SELENIUM	U	6.0	6.0	2.6		
135-CC31A-8.0-8.5	JC14857-9A	SILVER	U	0.67	0.67	0.66		
135-CC31A-8.0-8.5	JC14857-9A	SODIUM	U	471B	471	1300	Qualify	1,2
135-CC31A-8.0-8.5	JC14857-9A	VANADIUM	U	29.8	29.8	6.6		
135-CC31A-8.0-8.5	JC14857-9A	ZINC	U	254	254	6.6	Qualify	6,8
135-BB35AR-1.0-1.5	JC14857-10A	MERCURY	U	0.48	0.48	0.037		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-BB35AR-11.0-11.5	JC14857-11A	MERCURY	U	0.090	0.090	0.036		
135-BB35AR-13.0-13.5	JC14857-12A	MERCURY	U	0.14	0.14	0.034		
135-BB35AR-14.0-14.5	JC14857-13A	MERCURY	U	0.12	0.12	0.038		
135-BB35AR-15.0-15.5	JC14857-14A	MERCURY	U	0.035	0.035	0.035	Qualify	7
135-BB35AR-3.0-3.5	JC14857-15A	MERCURY	U	2.0	2.0	0.18		
135-BB35AR-5.0-5.5	JC14857-16A	MERCURY	U	0.77	0.77	0.031		
135-BB35AR-7.0-7.5	JC14857-17A	MERCURY	U	0.083	0.083	0.033		
135-BB35AR-7.0-7.5X	JC14857-18A	MERCURY	U	0.10	0.10	0.033		
135-BB35AR-9.0-9.5	JC14857-19A	MERCURY	U	0.064	0.064	0.037		
135-BB36A-1.5-2.0	JC14857-20A	MERCURY	U	0.33	0.33	0.038		
135-BB36A-11.5-12.0	JC14857-21A	MERCURY	U	0.021B	0.021	0.037	Qualify	2
135-BB36A-13.5-14.0	JC14857-22A	MERCURY	U	0.49	0.49	0.039		
135-BB36A-14.0-14.5	JC14857-23A	MERCURY	U	0.032B	0.032	0.033	Qualify	2,7
135-BB36A-3.5-4.0	JC14857-24A	MERCURY	U	0.12	0.12	0.037		
135-BB36A-5.5-6.0	JC14857-25A	MERCURY	U	0.020B	0.020	0.035	Qualify	2
135-BB36A-7.5-8.0	JC14857-26A	MERCURY	U	0.054	0.054	0.036		
135-CC28A-10.0-10.5	JC14857-28A	MERCURY	U	0.52	0.52	0.031		
135-CC28A-10.0-10.5X	JC14857-29A	MERCURY	U	0.63	0.63	0.034		
135-CC28A-12.0-12.5	JC14857-30A	MERCURY	U	10.6	10.6	0.64		
135-CC28A-14.0-14.5	JC14857-31A	MERCURY	U	3.8	3.8	0.33		
135-CC28A-16.0-16.5	JC14857-32A	MERCURY	U	2.5	2.5	0.17		
135-CC28A-18.0-18.5	JC14857-33A	MERCURY	U	2.3	2.3	0.17		
135-CC28A-18.5-19.0	JC14857-34A	MERCURY	U	4.4	4.4	0.34		
135-CC28A-19.0-19.5	JC14857-35A	MERCURY	U	0.029B	0.029	0.032	Qualify	2,7
135-CC31A-10.0-10.5	JC14857-1A	MERCURY	U	0.22	0.22	0.035		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-CC31A-12.0-12.5	JC14857-2A	MERCURY	U	7.8	7.8	0.34		
135-CC31A-14.0-14.5	JC14857-3A	MERCURY	U	0.55	0.55	0.035	Qualify	7
135-CC31A-16.0-16.5	JC14857-4A	MERCURY	U	0.089	0.089	0.035		
135-CC31A-16.5-17.0	JC14857-5A	MERCURY	U	0.071	0.071	0.034	Qualify	7
135-CC31A-2.0-2.5	JC14857-6A	MERCURY	U	1.2	1.2	0.079		
135-CC31A-4.0-4.5	JC14857-7A	MERCURY	U	1.7	1.7	0.19		
135-CC31A-6.0-6.5	JC14857-8A	MERCURY	U	5.8	5.8	0.34		
135-CC31A-8.0-8.5	JC14857-9A	MERCURY	U	0.12	0.12	0.035		

Note: A “U” under Method Blank column indicates a nondetect result.
A “U” under the Laboratory Sample Result and Validation Sample Result columns indicates a nondetect result at the RL.

NJDEP Laboratory Footnote

1. The value reported is greater than three (3) times but less than ten (10) times the value in the equipment blank and is considered "real". However, the reported value must be quantitatively qualified "J" due to the equipment blank contamination.

2. The reported result was greater than the MDL but less than the RL and therefore was estimated (J).

3. The positive and /or nondetected values were estimated because the MS and/or MSD recoveries were below the QC criteria.

4. The positive values were estimated because the MS and/or MSD recoveries exceeded the QC criteria. A high bias may be present.

5. The result was estimated because the field duplicate RPD exceeded the QC criteria for results > 5X the RL.

6. The positive and nondetect values were estimated because the MS/MSD RPD exceeded the QC criteria.

7. The result was estimated because the percent solids were less than 50%.

8. The result was qualified because with an undefined bias because the MS and MSD recoveries were outside of the QC limits in opposite directions.

TAL Metals Aqueous Target Analyte Summary Hit List

Site Name PPG Site 135/South Supplemental PDI Soil Sampling
Sampling Dates February 25, 2016
Lab Name/ID Accutest, Dayton, NJ
SDG No JC14857A
Sample Matrix Aqueous
Trip Blank ID NA
Field Blank ID 135-FB20160225

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/l)	Laboratory Sample Result (ug/l)	Validation Sample Result (ug/l)	RL (ug/l)	Quality Assurance Decision	NJDEP Validation Footnote
135-FB20160225	JC14857-36A	BARIUM	U	1.8B	1.8	200	Qualify	4
135-FB20160225	JC14857-36A	CALCIUM METAL	U	172B	172	5000	Qualify	2,4
135-FB20160225	JC14857-36A	COPPER	U	2.8B		10	Negate	1
135-FB20160225	JC14857-36A	MAGNESIUM	U	80.7B	80.7	5000	Qualify	4
135-FB20160225	JC14857-36A	MANGANESE	U	3.1B		15	Negate	1
135-FB20160225	JC14857-36A	NICKEL	U	2.8B	2.8	10	Qualify	4
135-FB20160225	JC14857-36A	POTASSIUM	U	76.4B	76.4	10000	Qualify	4
135-FB20160225	JC14857-36A	SODIUM	U	330B	330	10000	Qualify	3,4

Note: A “U” under Method Blank column indicates a nondetect result.
A “U” under the Laboratory Sample Result and Validation Sample Result columns indicates a nondetect result at the RL.

NJDEP Laboratory Footnote

1. The value reported is less than or equal to 3x the value in the preparation/reagent blank. It is the policy of NJDEP-DPFSR to negate (UB) the reported value due to probable foreign contamination unrelated to the actual sample. The "B" qualifier alerts the end-user to the presence of this analyte in the method blank.

2. The value reported is greater than three (3) times but less than ten (10) times the value in the method blank and is considered "real". However, the reported value must be quantitatively qualified "JB" due to the preparation/reagent blank contamination. The "B" qualifier alerts the end-user to the presence of this analyte in the method blank.

3. The value reported is greater than three (3) times but less than ten (10) times the value in the equipment blank and is considered "real". However, the reported value must be quantitatively qualified "J" due to the equipment blank contamination.

4. The reported result was greater than the MDL but less than the RL and therefore was estimated (J).

Attachment B

Data Validation Report Form

Client Name: PPG Industries	**Project Number:** 60314351.GA.DE.PDI.P3
Site Location: Narula/Smith Site 135 PDI Soil Sampling, Jersey City, NJ	**Project Manager:** Scott Mikaelian
Laboratory: Accutest, Dayton, NJ	**Type of Validation:** Limited
Laboratory Job No: JC14857A	**Date Checked:** 3/22/2016
Validator: Sharon McKechnie	**Peer:** Dion Lewis and Dawn Brule

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X			
Field I.D. included?	X			
Laboratory I.D. included?	X			
Did data package sample IDs match sample IDs on COC?		X		All IDs 135-BB35AR-xxx were missing the “R” in data packages
Did electronic data deliverable (EDD) sample IDs match COC sample IDs?		X		See above
Did data package sample IDs match electronic data deliverable (EDD) sample IDs?		X		See above. EDD correct, COC and data pkgs incorrect
Sample matrix included?	X			
Sample receipt temperature 2-6C?	X			4.7º C
Signed COCs included?	X			
Date of sample collection included?	X			
Date of sample digestion included?	X			
Date of analysis included?	X			
Holding time met QC criteria? (Metals -180 days from sample collection; Mercury - 28 days from sample collection. If HT exceeded by 10 days R all results.	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			
Definitions: MDL - Method Detection Limit; %R - Percent Recovery; RL - Reporting Limit; RPD - Relative Percent Difference; RSD - Relative Standard Deviation :Corr - Correlation Coefficient.				

ITEM	YES	NO	N/A	COMMENTS
Sample dilutions?	X			
Initial calibration documentation included in lab package?			X	N/A for Limited Validation
1) Calibrate daily or each time instrument is set up.			X	
2) ICP (6010) -Blank plus 1 standard?			X	
3) Hg (7470/7471) -Blank plus 5 standards?			X	
Initial Calibration Verification Standard (ICV) for ICP (6010) and Initial Calibration Check Standard (ICCS) for Hg (7470/7471) included in lab package?			X	NA limited validation
1) Analyzed immediately after initial calibration? If no, reject (R) data.			X	
2) %R criteria met? (90-110%).			X	
3) Spot check ICV/ICCS results for several analytes.			X	
Continuing Calibration Verification Standard (CCV) for ICP (6010) and Calibration Check Standard (CCS) for Hg (7470/7471) included in Lab Package?			X	NA limited validation
1) Analyzed immediately after each ICV/ICC/CB and after every 10 samples?			X	
2) CCS and CCV from independent source and at mid- level of calibration curve.			X	
3) %R criteria met? (90-110%R).			X	
4) Spot check CCV/CCS results for several analytes.			X	
Low Calibration Standard (CRI) included in Lab Package?			X	NA limited validation
1) %R criteria met? - 50-150% for Co, Mn, Zn, by ICP-MS; Pb, Tl by 6010; 70-130% all others.			X	
Calibration Blanks			X	N/A for Limited Validation
1) Analyzed after daily calibration and after each ICV/ICC/CCV/CCS and after every 10 samples			X	
2) Absolute value <3xIDL?			X	
Method Blank Included in Lab Package?	X			
1) Method blank analyzed with each preparation batch or every SDG, or 1/20 samples?	X			
2) Method blank analyzed 1/20 samples?	X			
3) MB results nondetect?		X		See nonconformance tables.
4) Negative MB result reported?	X			But < MDL, no effect on data

ITEM	YES	NO	N/A	COMMENTS
Field Blanks/Equipment Blanks Included in Lab Package?	X			
1) FB/EB result non-detect?		X		See nonconformance tables.
ICP Interference Check Sample (ICS) included in Lab Package?			X	NA limited validation
1) Analyzed at beginning of analytical run?			X	
2) %R criteria met? (80-120%)			X	
3) Spot check accuracy of %Rs			X	
Matrix Spike/Matrix Spike Duplicate Data Included in Lab Package?	X			
1) MS/MSD %R (75-125%R) and RPD (+20%) criteria met?		X		See nonconformance tables
2) Was a sample spiked at the frequency of 1/batch or 20 samples?	X			
3) Was the MS performed on a site sample?	X			
4) Was the MS performed on a FB/EB or TB?		X		
Post Digestion Spike			X	NA limited validation
1) %R criteria met? (75-125%R			X	
2) Was the spike performed on a FB/EB or TB?			X	
3) Was a sample spiked at the frequency of 1/batch or 20 samples?			X	
Laboratory Duplicate Data Included in Lab Package?		X		
Aqueous - IS RPD is ≤20%?			X	
Soil - IS RPD is ≤35%?			X	
Was a Laboratory Control Sample (LCS) Included in Lab Package?	X			
1) LCS %R criteria met? (80-120%R).	X			
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples?	X			
Serial Dilution			X	NA limited validation
1) %D (<10%R) criteria met? -			X	
2) Was the frequency 1/batch or 20 samples?			X	
3) Was a site sample used?			X	
4) Was a FB/EB or TB used?			X	

ITEM	YES	NO	N/A	COMMENTS
5) Spot check accuracy of %Ds.			X	
Field Duplicate Data included in Lab Package?	X			
Aqueous – Is RPD is ≤20?			X	
Soil - Is RPD is ≤35%?		X		See nonconformance tables.
Percent Solids data included in Lab Package?	X			
1) %Solids criteria (Reg 2 criteria) met? (>/=50%)		X		See nonconformance tables.

Blanks

Analyte	Result	3X	10X	Actions	Associated Samples
Soil Method Blank	**(mg/kg)**	**(mg/kg)**	**(mg/kg)**		
Barium	0.058	0.174	0.58	All >10X MB; Accept	MP92200 1A-20A
Calcium	28.9	86.7	289	All >10X MB; Accept	
Copper	0.48	1.44	4.8	All >10X MB; Accept	
Manganese	0.039	0.117	0.39	All >10X MB; Accept	
Sodium	5.1	15.3	51	All >10X MB; Accept	
Mercury	0.0032	0.0096	0.032	All >10X MB; Accept	MP92204 1A-19A
Barium	0.15	0.45	1.5	All >10X MB; Accept	MP92208 21A-35A
Calcium	39	117	390	All >10X MB; Accept	
Chromium	0.12	0.36	1.2	All >10X MB; Accept	
Copper	0.13	0.39	1.3	All >10X MB; Accept	
Magnesium	10.7	32.1	107	All >10X MB; Accept	
Manganese	0.077	0.231	0.77	All >10X MB; Accept	
Potassium	7.2	21.6	72	All >10X MB; Accept	
Sodium	11	33	110	All >10X MB; Accept	
Aqueous Method Blank	**(ug/l)**	**(ug/l)**	**(ug/l)**		
Calcium	26.5	79.5	265	<10X MB, Estimate (JB)	AQ MP92209 36A Only
Copper	1.9	5.7	19	<3X MB, Negate (UB) AT RL	
Manganese	1.6	4.8	16	<3X MB, Negate (UB) AT RL	
Equipment Blank	**(mg/kg)**	**(mg/kg)**	**(mg/kg)**		
Barium	0.3	0.9	3	All >10X EB; Accept	All Samples
Calcium	28.7	86.1	287	All >10X EB; Accept	
Magnesium	13.5	40.5	135	All >10X EB; Accept	
Nickel	0.47	1.41	4.7	All >10X EB; Accept	
Potassium	12.7	38.1	127	All >10X EB; Accept	
Sodium	55	165	550	<10X EB; Estimate (J) OR >10X EB; Accept	

Field Duplicate Results

Analyte	Sample	Lab Sample	Result	Qual	RL	DupSample	Lab Sample	Result	Qual	RL	RPD	Action
ALUMINUM	135-CC28A-10.0-10.5	JC14857-28A	5470		49	135-CC28A-10.0-10.5X	JC14857-29A	6210		50	12.7	OK @35
IRON	135-CC28A-10.0-10.5	JC14857-28A	5620		49	135-CC28A-10.0-10.5X	JC14857-29A	7030		50	22.3	OK @35
LEAD	135-CC28A-10.0-10.5	JC14857-28A	280		2	135-CC28A-10.0-10.5X	JC14857-29A	200		2	33.3	OK @35
MAGNESIUM	135-CC28A-10.0-10.5	JC14857-28A	410	B	490	135-CC28A-10.0-10.5X	JC14857-29A	499	B	500	19.6	OK @35
MANGANESE	135-CC28A-10.0-10.5	JC14857-28A	83.7		1.5	135-CC28A-10.0-10.5X	JC14857-29A	132		1.5	44.8	**>35; Estimate (J)**
NICKEL	135-CC28A-10.0-10.5	JC14857-28A	15.5		3.9	135-CC28A-10.0-10.5X	JC14857-29A	18.1		4	15.5	OK @35
POTASSIUM	135-CC28A-10.0-10.5	JC14857-28A	758	B	990	135-CC28A-10.0-10.5X	JC14857-29A	792	B	990	4.4	OK @35
SILVER	135-CC28A-10.0-10.5	JC14857-28A	0.5		0.49	135-CC28A-10.0-10.5X	JC14857-29A	0.39	B	0.5	24.7	OK @35
SODIUM	135-CC28A-10.0-10.5	JC14857-28A	553	B	990	135-CC28A-10.0-10.5X	JC14857-29A	474	B	990	15.4	OK @35
THALLIUM	135-CC28A-10.0-10.5	JC14857-28A	0.99	U	0.99	135-CC28A-10.0-10.5X	JC14857-29A	0.99	U	0.99		Both ND
ANTIMONY	135-CC28A-10.0-10.5	JC14857-28A	0.79	B	2	135-CC28A-10.0-10.5X	JC14857-29A	1.5	B	2	62	>35; Both <5X RL, Absolute Difference < RL; Accept
ARSENIC	135-CC28A-10.0-10.5	JC14857-28A	9.6		2	135-CC28A-10.0-10.5X	JC14857-29A	9.4		2	2.1	OK @35
BARIUM	135-CC28A-10.0-10.5	JC14857-28A	168		20	135-CC28A-10.0-10.5X	JC14857-29A	157		20	6.8	OK @35
BERYLLIUM	135-CC28A-10.0-10.5	JC14857-28A	0.41		0.2	135-CC28A-10.0-10.5X	JC14857-29A	0.47		0.2	13.6	OK @35
ALUMINUM	135-BB35AR-7.0-7.5	JC14857-17A	12600		61	135-BB35AR-7.0-7.5X	JC14857-18A	18700		53	39	**>35; Estimate (J)**
IRON	135-BB35AR-7.0-7.5	JC14857-17A	16600		61	135-BB35AR-7.0-7.5X	JC14857-18A	16400		53	1.2	OK @35
LEAD	135-BB35AR-7.0-7.5	JC14857-17A	63.7		2.4	135-BB35AR-7.0-7.5X	JC14857-18A	30.4		2.1	70.8	**>35; Estimate**

Analyte	Sample	Lab Sample	Result	Qual	RL	DupSample	Lab Sample	Result	Qual	RL	RPD	Action
												(J)
MAGNESIUM	135-BB35AR-7.0-7.5	JC14857-17A	4740		610	135-BB35AR-7.0-7.5X	JC14857-18A	3670		530	25.4	OK @35
MANGANESE	135-BB35AR-7.0-7.5	JC14857-17A	261		1.8	135-BB35AR-7.0-7.5X	JC14857-18A	222		1.6	16.1	OK @35
NICKEL	135-BB35AR-7.0-7.5	JC14857-17A	16.6		4.9	135-BB35AR-7.0-7.5X	JC14857-18A	16.9		4.3	1.8	OK @35
POTASSIUM	135-BB35AR-7.0-7.5	JC14857-17A	2620		1200	135-BB35AR-7.0-7.5X	JC14857-18A	1830		1100	35.5	**>35; Estimate (J)**
CADMIUM	135-CC28A-10.0-10.5	JC14857-28A	0.23	B	0.49	135-CC28A-10.0-10.5X	JC14857-29A	0.23	B	0.5	0	OK @35
CHROMIUM	135-CC28A-10.0-10.5	JC14857-28A	15.5		0.99	135-CC28A-10.0-10.5X	JC14857-29A	15.1		0.99	2.6	OK @35
COBALT	135-CC28A-10.0-10.5	JC14857-28A	6		4.9	135-CC28A-10.0-10.5X	JC14857-29A	7.5		5	22.2	OK @35
COPPER	135-CC28A-10.0-10.5	JC14857-28A	70.3		2.5	135-CC28A-10.0-10.5X	JC14857-29A	34.8		2.5	67.6	**>35; Estimate (J)**
VANADIUM	135-CC28A-10.0-10.5	JC14857-28A	32.2		4.9	135-CC28A-10.0-10.5X	JC14857-29A	33.1		5	2.8	OK @35
ZINC	135-CC28A-10.0-10.5	JC14857-28A	96.6		4.9	135-CC28A-10.0-10.5X	JC14857-29A	107		5	10.2	OK @35
CALCIUM METAL	135-CC28A-10.0-10.5	JC14857-28A	3320		490	135-CC28A-10.0-10.5X	JC14857-29A	4030		500	19.3	OK @35
SELENIUM	135-CC28A-10.0-10.5	JC14857-28A	1.8	B	2	135-CC28A-10.0-10.5X	JC14857-29A	1.8	B	2	0	OK @35
MERCURY	135-CC28A-10.0-10.5	JC14857-28A	0.52		0.031	135-CC28A-10.0-10.5X	JC14857-29A	0.63		0.034	19.1	OK @35
SILVER	135-BB35AR-7.0-7.5	JC14857-17A	0.61	U	0.61	135-BB35AR-7.0-7.5X	JC14857-18A	0.53	U	0.53		Both ND
SODIUM	135-BB35AR-7.0-7.5	JC14857-17A	614	B	1200	135-BB35AR-7.0-7.5X	JC14857-18A	717	B	1100	15.5	OK @35
THALLIUM	135-BB35AR-7.0-7.5	JC14857-17A	1.2	U	1.2	135-BB35AR-7.0-7.5X	JC14857-18A	1.1	U	1.1		Both ND
ANTIMONY	135-BB35AR-7.0-7.5	JC14857-17A	0.79	B	2.4	135-BB35AR-7.0-7.5X	JC14857-18A	2.1	U	2.1	NC	Detected < 5X RL; Accept
ARSENIC	135-BB35AR-7.0-7.5	JC14857-17A	5.7		2.4	135-BB35AR-7.0-7.5X	JC14857-18A	4.7		2.1	19.2	OK @35
BARIUM	135-BB35AR-7.0-7.5	JC14857-17A	69.4		24	135-BB35AR-7.0-7.5X	JC14857-18A	84.6		21	19.7	OK @35

Analyte	Sample	Lab Sample	Result	Qual	RL	DupSample	Lab Sample	Result	Qual	RL	RPD	Action
BERYLLIUM	135-BB35AR-7.0-7.5	JC14857-17A	1.1		0.24	135-BB35AR-7.0-7.5X	JC14857-18A	0.91		0.21	18.9	OK @35
CADMIUM	135-BB35AR-7.0-7.5	JC14857-17A	0.43	B	0.61	135-BB35AR-7.0-7.5X	JC14857-18A	0.32	B	0.53	29.3	OK @35
CHROMIUM	135-BB35AR-7.0-7.5	JC14857-17A	27		1.2	135-BB35AR-7.0-7.5X	JC14857-18A	25.3		1.1	6.5	OK @35
COBALT	135-BB35AR-7.0-7.5	JC14857-17A	9.2		6.1	135-BB35AR-7.0-7.5X	JC14857-18A	9		5.3	2.2	OK @35
COPPER	135-BB35AR-7.0-7.5	JC14857-17A	24.3		3	135-BB35AR-7.0-7.5X	JC14857-18A	17.8		2.7	30.9	OK @35
VANADIUM	135-BB35AR-7.0-7.5	JC14857-17A	46.2		6.1	135-BB35AR-7.0-7.5X	JC14857-18A	40.3		5.3	13.6	OK @35
ZINC	135-BB35AR-7.0-7.5	JC14857-17A	128		6.1	135-BB35AR-7.0-7.5X	JC14857-18A	65.9		5.3	64.1	**>35; Estimate (J)**
CALCIUM METAL	135-BB35AR-7.0-7.5	JC14857-17A	2590		610	135-BB35AR-7.0-7.5X	JC14857-18A	1710		530	40.9	**>35; Estimate (J)**
SELENIUM	135-BB35AR-7.0-7.5	JC14857-17A	2.4	U	2.4	135-BB35AR-7.0-7.5X	JC14857-18A	2.1	U	2.1		Both ND
MERCURY	135-BB35AR-7.0-7.5	JC14857-17A	0.083		0.033	135-BB35AR-7.0-7.5X	JC14857-18A	0.1		0.033	18.6	OK @35

Matrix Spike Results

Analyte	Sample ID	Lab Sample ID	MS%R	MSD %R	MS Criteria (%)	RPD (%)	RPD status	MS Status
ALUMINUM	135-CC28A-12.0-12.5	JC14857-30A	130.6	145.2	75-125	4.1	OK @20	**Estimate Detects (J)**
ANTIMONY	135-CC28A-12.0-12.5	JC14857-30A	64	57.3	75-125	10.8	OK @20	**Estimate (J/UJ)**
BARIUM	135-CC28A-12.0-12.5	JC14857-30A	119.3	68.6	75-125	20.3	>20	**Estimate (J/UJ)**
CALCIUM METAL	135-CC28A-12.0-12.5	JC14857-30A	1189.3	474	75-125	64.7	>20	**Estimate (J/UJ)**
COPPER	135-CC28A-12.0-12.5	JC14857-30A	57.2	56.8	75-125	0.3	OK @20	**Estimate (J/UJ)**
IRON	135-CC28A-12.0-12.5	JC14857-30A	257	427.9	75-125	14.8	OK @20	Spiked sample >4X Amt Spiked; No Quals
LEAD	135-CC28A-12.0-12.5	JC14857-30A	408.8	69.7	75-125	63.7	>20	**Estimate (J/UJ)**
MANGANESE	135-CC28A-12.0-12.5	JC14857-30A	69.4	100.7	75-125	16	OK @20	**Estimate (J/UJ)**
ZINC	135-CC28A-12.0-12.5	JC14857-30A	86.8	322.1	75-125	81.7	>20	**Estimate (J/UJ)**
MERCURY	135-CC28A-12.0-12.5	JC14857-30A	-1032.4	-1144.7	75-125	4.2	OK @20	Spiked sample >4X Amt Spiked; No Quals
ALUMINUM	135-CC31A-8.0-8.5	JC14857-9A	206.5	230.9	75-125	6.1	OK @20	**Estimate Detects (J)**
ANTIMONY	135-CC31A-8.0-8.5	JC14857-9A	63.1	58.9	75-125	6.7	OK @20	**Estimate (J/UJ)**
BARIUM	135-CC31A-8.0-8.5	JC14857-9A	93	672.2	75-125	132	>20	**Estimate (J/UJ)**
CALCIUM METAL	135-CC31A-8.0-8.5	JC14857-9A	81.1	70.2	75-125	3.6	OK @20	**Estimate (J/UJ)**
COPPER	135-CC31A-8.0-8.5	JC14857-9A	-504	-512.8	75-125	0.3	OK @20	Spiked sample >4X Amt Spiked; No Quals
IRON	135-CC31A-8.0-8.5	JC14857-9A	-335.5	-152.5	75-125	44.4	>20	Spiked sample >4X Amt Spiked; No Quals
LEAD	135-CC31A-8.0-8.5	JC14857-9A	51.9	2047.1	75-125	158.9	>20	**Estimate (J/UJ)**
MANGANESE	135-CC31A-8.0-8.5	JC14857-9A	88.1	146.4	75-125	31.5	>20	**Estimate (J/UJ)**
ZINC	135-CC31A-8.0-8.5	JC14857-9A	72.8	224.2	75-125	61.7	>20	**Estimate (J/UJ)**

Chromium vs. Hexavalent Chromium

Sample ID	Lab Sample ID	Total Chromium (mg/kg)	Total Chromium Reporting Limit (mg/kg)	Total Hexavalent Chromium (mg/kg)	Total Hexavalent Chromium Reporting Limit (mg/kg)	Action
135-CC31A-10.0-10.5	JC14857-1A	28.4	1.4	0	0.60	Chromium > Hexavalent Chromium, RLs Not Significantly Different; Accept
135-CC31A-12.0-12.5	JC14857-2A	19.5	1.3	1.2	0.54	Chromium > Hexavalent Chromium, RLs Not Significantly Different; Accept
135-CC31A-14.0-14.5	JC14857-3A	23.2	1.7	1.8	0.83	Chromium > Hexavalent Chromium, RLs Not Significantly Different; Accept
135-CC31A-16.0-16.5	JC14857-4A	25.3	1.3	0		Chromium > Hexavalent Chromium, RLs Not Significantly Different; Accept
135-CC31A-16.5-17.0	JC14857-5A	27.2	2.7	0.83	1.4	Chromium > Hexavalent Chromium, RLs Not Significantly Different; Accept
135-CC31A-2.0-2.5	JC14857-6A	157	5.8	10.2	0.50	Chromium > Hexavalent Chromium, RLs Not Significantly Different; Accept
135-CC31A-4.0-4.5	JC14857-7A	71.8	2.4	1.8	0.49	Chromium > Hexavalent Chromium, RLs Not Significantly Different; Accept
135-CC31A-6.0-6.5	JC14857-8A	21.4	1.4	0.41	0.58	Chromium > Hexavalent Chromium, RLs Not Significantly Different; Accept
135-CC31A-8.0-8.5	JC14857-9A	13.6	1.3	0.38	0.53	Chromium > Hexavalent Chromium, RLs Not Significantly Different; Accept
135-BB35AR-1.0-1.5	JC14857-10A	30.5	1.1	3.6	0.46	Chromium > Hexavalent Chromium, RLs Not Significantly Different; Accept
135-BB35AR-11.0-11.5	JC14857-11A	20.2	0.92	0.75	0.47	Chromium > Hexavalent Chromium, RLs Not Significantly Different; Accept

Sample ID	Lab Sample ID	Total Chromium (mg/kg)	Total Chromium Reporting Limit (mg/kg)	Total Hexavalent Chromium (mg/kg)	Total Hexavalent Chromium Reporting Limit (mg/kg)	Action
135-BB35AR-13.0-13.5	JC14857-12A	16.7	1.2	0.59	0.50	Chromium > Hexavalent Chromium, RLs Not Significantly Different; Accept
135-BB35AR-14.0-14.5	JC14857-13A	17.4	1.1	0.38	0.47	Chromium > Hexavalent Chromium, RLs Not Significantly Different; Accept
135-BB35AR-15.0-15.5	JC14857-14A	20.6	1.9	1.6	0.93	Chromium > Hexavalent Chromium, RLs Not Significantly Different; Accept
135-BB35AR-3.0-3.5	JC14857-15A	45.1	1.3	7.1	0.51	Chromium > Hexavalent Chromium, RLs Not Significantly Different; Accept
135-BB35AR-5.0-5.5	JC14857-16A	70.7	1.3	2.0	0.56	Chromium > Hexavalent Chromium, RLs Not Significantly Different; Accept
135-BB35AR-7.0-7.5	JC14857-17A	27.0	1.2	0	0.62	Chromium > Hexavalent Chromium, RLs Not Significantly Different; Accept
135-BB35AR-7.0-7.5X	JC14857-18A	25.3	1.1	1.4	0.51	Chromium > Hexavalent Chromium, RLs Not Significantly Different; Accept
135-BB35AR-9.0-9.5	JC14857-19A	17.8	0.99	0.50	0.47	Chromium > Hexavalent Chromium, RLs Not Significantly Different; Accept
135-BB36A-1.5-2.0	JC14857-20A	36.2	1.1	0.33	0.46	Chromium > Hexavalent Chromium, RLs Not Significantly Different; Accept
135-BB36A-11.5-12.0	JC14857-21A	16.2	1.2	1.1	0.47	Chromium > Hexavalent Chromium, RLs Not Significantly Different; Accept
135-BB36A-13.5-14.0	JC14857-22A	13.9	1.2	0.77	0.49	Chromium > Hexavalent Chromium, RLs Not Significantly Different; Accept
135-BB36A-14.0-14.5	JC14857-23A	22.7	0.99	7.3	1.0	Chromium > Hexavalent Chromium, RLs Not Significantly Different; Accept

Sample ID	Lab Sample ID	Total Chromium (mg/kg)	Total Chromium Reporting Limit (mg/kg)	Total Hexavalent Chromium (mg/kg)	Total Hexavalent Chromium Reporting Limit (mg/kg)	Action
135-BB36A-3.5-4.0	JC14857-24A	12.3	1.2	0.48	0.47	Chromium > Hexavalent Chromium, RLs Not Significantly Different; Accept
135-BB36A-5.5-6.0	JC14857-25A	20.2	1.2	0.63	0.46	Chromium > Hexavalent Chromium, RLs Not Significantly Different; Accept
135-BB36A-7.5-8.0	JC14857-26A	16.2	1.1	0.95	0.47	Chromium > Hexavalent Chromium, RLs Not Significantly Different; Accept
135-BB36A-9.5-10.0	JC14857-27A	18.7	0.90	0.51	0.47	Chromium > Hexavalent Chromium, RLs Not Significantly Different; Accept
135-CC28A-10.0-10.5	JC14857-28A	15.5	0.99	0.80	0.79	Chromium > Hexavalent Chromium, RLs Not Significantly Different; Accept
135-CC28A-10.0-10.5X	JC14857-29A	15.1	0.99	0.49	0.66	Chromium > Hexavalent Chromium, RLs Not Significantly Different; Accept
135-CC28A-12.0-12.5	JC14857-30A	32.2	1.4	1.8	0.57	Chromium > Hexavalent Chromium, RLs Not Significantly Different; Accept
135-CC28A-14.0-14.5	JC14857-31A	12.6	1.3	0.27	0.53	Chromium > Hexavalent Chromium, RLs Not Significantly Different; Accept
135-CC28A-16.0-16.5	JC14857-32A	38.9	1.0	4.4	0.73	Chromium > Hexavalent Chromium, RLs Not Significantly Different; Accept
135-CC28A-18.0-18.5	JC14857-33A	26.3	1.8	1.3	0.70	Chromium > Hexavalent Chromium, RLs Not Significantly Different; Accept
135-CC28A-18.5-19.0	JC14857-34A	30.6	0.96	2.7	0.60	Chromium > Hexavalent Chromium, RLs Not Significantly Different; Accept
135-CC28A-19.0-19.5	JC14857-35A	18.2	0.98	1.5	1.2	Chromium > Hexavalent Chromium, RLs Not Significantly Different; Accept

Sample ID	Lab Sample ID	Total Chromium (mg/kg)	Total Chromium Reporting Limit (mg/kg)	Total Hexavalent Chromium (mg/kg)	Total Hexavalent Chromium Reporting Limit (mg/kg)	Action
135-FB20160225 (ug/l)	JC14857-36A	0	10	0	0.010	Both Nondetect; OK

Client Name: PPG Industries	**Project Number:** 60314351.GA.DE.PDI.P3
Site Location: Narula/Smith Site 135 PDI Soil Sampling, Jersey City, NJ	**Project Manager:** Scott Mikaelian
Laboratory: Accutest, Dayton, NJ	**Type of Validation:** Limited
Laboratory Job No: JC14857A	**Date Checked:** 3/22/2016
Validator: Sharon McKechnie	**Peer:** Dion Lewis and Dawn Brule

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X			
Field I.D. included?	X			
Laboratory I.D. included?	X			
Did data package sample IDs match sample IDs on COC?		X		All IDs 135-BB35AR-xxx were missing the “R” in data packages
Did electronic data deliverable (EDD) sample IDs match COC sample IDs?		X		See above
Did data package sample IDs match electronic data deliverable (EDD) sample IDs?		X		See above. EDD correct, COC and data pkgs incorrect
Sample matrix included?	X			
Sample receipt temperature 2-6C?	X			4.7ºC
Signed COCs included?	X			
Date of sample collection included?	X			
Date of analysis included?	X			
Holding time to analysis met criteria?	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			

Definitions: MDL - Method Detection Limit; %R - Percent Recovery; RL - Reporting Limit; RPD - Relative Percent Difference; RSD - Relative Standard Deviation :Corr - Correlation Coefficient.

ITEM	YES	NO	N/A	COMMENTS
Sample dilutions?	X			
Method Blank Included in Lab Package?	X			
1) Method blank analyzed with each preparation batch?	X			
2) Absolute value should not exceed RL.	X			
Trip Blanks/Field Blanks/Equipment Blanks Included in Lab Package?	X			
1) TB/FB/EB results non-detect?	X			
Surrogate Data Included?	X			
1) Is %R criteria (laboratory criteria) met?	X			
Matrix Spike/Matrix Spike Duplicate Data Included in Lab Package?	X			
1) %R and RPD (laboratory criteria) met?		X		See nonconformance tables.
2) Was the spike concentration at the same concentration as the LCS?	X			
3) Was a sample spiked at the frequency of 1 per 20 samples?	X			
Was a Laboratory Control Sample (LCS) Included in Lab Package?	X			
1) LCS %R criteria met? (laboratory criteria)	X			
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples?	X			
Field Duplicate Data included in Lab Package?	X			
1) %RPD criteria (Reg 2 criteria) met? (< TD>		X		See nonconformance tables.
Percent Solids data included in Lab Package?	X			
1) %Solids criteria (Reg 2 criteria) met? (>/=50%)		X		See nonconformance tables.

Matrix Spike Results

Analyte	Spiked Sample	Spike Lab Sample	MS%R	Spike Lower Limit	Spike Upper Limit	MS Within Limits	MSD %R	Dup Lower Limit	Dup Upper Limit	MSD Within Limits	RPD (%)	RPD Limit	RPD status
ETHYLBENZENE	135-BB36A-13.5-14.0	JC14857-22A	35	34	145	OK							
STYRENE (MONOMER)	135-BB36A-13.5-14.0	JC14857-22A	15	32	156	LOW							
CIS-1,3-DICHLOROPROPENE	135-BB36A-13.5-14.0	JC14857-22A	26	41	144	LOW							
TRANS-1,3-DICHLOROPROPENE	135-BB36A-13.5-14.0	JC14857-22A	23	36	148	LOW							
1,4-DICHLOROBENZENE	135-BB36A-13.5-14.0	JC14857-22A	14	30	142	LOW							
1,2-DIBROMOETHANE(EDB)	135-BB36A-13.5-14.0	JC14857-22A	41	46	139	LOW							
1,2-DICHLOROETHANE	135-BB36A-13.5-14.0	JC14857-22A	55	56	140	LOW							
4-METHYL-2-PENTANONE (MIBK)	135-BB36A-13.5-14.0	JC14857-22A	57	33	154	OK							
METHYLCYCLOHEXANE	135-BB36A-13.5-14.0	JC14857-22A	19	14	153	OK							
TOLUENE	135-BB36A-13.5-14.0	JC14857-22A	42	40	141	OK							
CHLOROBENZENE	135-BB36A-13.5-14.0	JC14857-22A	30	38	144	LOW							
CYCLOHEXANE	135-BB36A-13.5-14.0	JC14857-22A	30	22	154	OK							
1,2,4-TRICHLOROBENZENE	135-BB36A-13.5-14.0	JC14857-22A	7	14	156	LOW							
CHLORODIBROMOMETHANE	135-BB36A-13.5-14.0	JC14857-22A	43	49	142	LOW							
TETRACHLOROETHENE	135-BB36A-13.5-14.0	JC14857-22A	37	34	163	OK							
XYLENES	135-BB36A-13.5-14.0	JC14857-22A	33	34	146	LOW							
CIS-1,2-DICHLOROETHENE	135-BB36A-13.5-14.0	JC14857-22A	42	45	137	LOW							
TRANS-1,2-DICHLOROETHENE	135-BB36A-13.5-14.0	JC14857-22A	38	42	141	LOW							
METHYL-TERT-BUTYL ETHER	135-BB36A-13.5-14.0	JC14857-22A	62	54	129	OK							

Analyte	Spiked Sample	Spike Lab Sample	MS%R	Spike Lower Limit	Spike Upper Limit	MS Within Limits	MSD %R	Dup Lower Limit	Dup Upper Limit	MSD Within Limits	RPD (%)	RPD Limit	RPD status
M-DICHLOROBENZENE	135-BB36A-13.5-14.0	JC14857-22A	15	28	148	LOW							
CARBON TETRACHLORIDE	135-BB36A-13.5-14.0	JC14857-22A	42	43	152	LOW							
METHYL N-BUTYL KETONE	135-BB36A-13.5-14.0	JC14857-22A	45	16	176	OK							
ACETONE	135-BB36A-13.5-14.0	JC14857-22A	204	10	180	HIGH							
CHLOROFORM	135-BB36A-13.5-14.0	JC14857-22A	56	52	134	OK							
BENZENE	135-BB36A-13.5-14.0	JC14857-22A	49	48	136	OK							
1,1,1-TRICHLOROETHANE	135-BB36A-13.5-14.0	JC14857-22A	58	48	144	OK							
BROMOMETHANE	135-BB36A-13.5-14.0	JC14857-22A	42	12	156	OK							
CHLOROMETHANE	135-BB36A-13.5-14.0	JC14857-22A	49	41	142	OK							
CHLOROBROMOMETHANE	135-BB36A-13.5-14.0	JC14857-22A	48	53	137	LOW							
CHLOROETHANE	135-BB36A-13.5-14.0	JC14857-22A	53	26	154	OK							
VINYL CHLORIDE	135-BB36A-13.5-14.0	JC14857-22A	48	38	149	OK							
DICHLOROMETHANE	135-BB36A-13.5-14.0	JC14857-22A	47	47	133	OK							
CARBON DISULFIDE	135-BB36A-13.5-14.0	JC14857-22A	29	34	146	LOW							
TRIBROMOMETHANE	135-BB36A-13.5-14.0	JC14857-22A	35	39	148	LOW							
BROMODICHLOROMETHANE	135-BB36A-13.5-14.0	JC14857-22A	49	50	145	LOW							
1,1-DICHLOROETHANE	135-BB36A-13.5-14.0	JC14857-22A	56	54	137	OK							
1,1-DICHLOROETHYLENE	135-BB36A-13.5-14.0	JC14857-22A	51	41	143	OK							
TRICHLOROFLUOROMETHANE	135-BB36A-13.5-14.0	JC14857-22A	63	39	153	OK							
DICHLORODIFLUOROMETHANE	135-BB36A-13.5-14.0	JC14857-22A	65	31	161	OK							
1,1,2-TRICHLOROTRIFLUOROETHANE	135-BB36A-13.5-14.0	JC14857-22A	38	30	152	OK							
1,2-DICHLOROPROPANE	135-BB36A-13.5-14.0	JC14857-22A	50	53	139	LOW							
2-BUTANONE (MEK)	135-BB36A-13.5-14.0	JC14857-22A	114	26	164	OK							
1,1,2-TRICHLOROETHANE	135-BB36A-13.5-14.0	JC14857-22A	45	43	146	OK							

Analyte	Spiked Sample	Spike Lab Sample	MS%R	Spike Lower Limit	Spike Upper Limit	MS Within Limits	MSD %R	Dup Lower Limit	Dup Upper Limit	MSD Within Limits	RPD (%)	RPD Limit	RPD status
TRICHLOROETHYLENE	135-BB36A-13.5-14.0	JC14857-22A	45	42	152	OK							
METHYL ACETATE	135-BB36A-13.5-14.0	JC14857-22A	172	26	176	OK							
1,1,2,2-TETRACHLOROETHANE	135-BB36A-13.5-14.0	JC14857-22A	35	31	149	OK							
1,2,3-TRICHLOROBENZENE	135-BB36A-13.5-14.0	JC14857-22A	7	14	153	LOW							
O-XYLENE	135-BB36A-13.5-14.0	JC14857-22A	33	36	145	LOW							
1,2-DICHLOROBENZENE	135-BB36A-13.5-14.0	JC14857-22A	14	30	144	LOW							
1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	135-BB36A-13.5-14.0	JC14857-22A	31	29	145	OK							
ISOPROPYLBENZENE	135-BB36A-13.5-14.0	JC14857-22A	30	36	145	LOW							
M+P-XYLENE	135-BB36A-13.5-14.0	JC14857-22A	32	32	148	OK							
1,2,4-TRICHLOROBENZENE	135-CC28A-12.0-12.5	JC14857-30A	5	14	156	LOW	3	14	156	LOW	49	36	>36
CHLORODIBROMOMETHANE	135-CC28A-12.0-12.5	JC14857-30A	14	49	142	LOW	19	49	142	LOW	36	24	>24
TETRACHLOROETHENE	135-CC28A-12.0-12.5	JC14857-30A	48	34	163	OK	48	34	163	OK	0	31	OK @31
XYLENES	135-CC28A-12.0-12.5	JC14857-30A	30	34	146	LOW	26	34	146	LOW	14	29	OK @29
CIS-1,2-DICHLOROETHENE	135-CC28A-12.0-12.5	JC14857-30A	27	45	137	LOW	21	45	137	LOW	28	28	OK @28
TRANS-1,2-DICHLOROETHENE	135-CC28A-12.0-12.5	JC14857-30A	25	42	141	LOW	19	42	141	LOW	28	30	OK @30
METHYL-TERT-BUTYL ETHER	135-CC28A-12.0-12.5	JC14857-30A	69	54	129	OK	74	54	129	OK	7	25	OK @25
M-DICHLOROBENZENE	135-CC28A-12.0-12.5	JC14857-30A	10	28	148	LOW	6	28	148	LOW	47	31	>31
CARBON TETRACHLORIDE	135-CC28A-12.0-12.5	JC14857-30A	35	43	152	LOW	38	43	152	LOW	9	31	OK @31
METHYL N-BUTYL KETONE	135-CC28A-12.0-12.5	JC14857-30A	28	16	176	OK	20	16	176	OK	36	32	>32
ACETONE	135-CC28A-12.0-12.5	JC14857-30A	68	10	180	OK	60	10	180	OK	5	33	OK @33
CHLOROFORM	135-CC28A-12.0-12.5	JC14857-30A	55	52	134	OK	52	52	134	OK	6	27	OK @27
BENZENE	135-CC28A-12.0-12.5	JC14857-30A	40	48	136	LOW	35	48	136	LOW	14	30	OK @30
1,1,1-TRICHLOROETHANE	135-CC28A-12.0-12.5	JC14857-30A	69	48	144	OK	78	48	144	OK	12	29	OK @29

Analyte	Spiked Sample	Spike Lab Sample	MS%R	Spike Lower Limit	Spike Upper Limit	MS Within Limits	MSD %R	Dup Lower Limit	Dup Upper Limit	MSD Within Limits	RPD (%)	RPD Limit	RPD status
BROMOMETHANE	135-CC28A-12.0-12.5	JC14857-30A	19	12	156	OK	20	12	156	OK	6	32	OK @32
CHLOROMETHANE	135-CC28A-12.0-12.5	JC14857-30A	50	41	142	OK	51	41	142	OK	2	28	OK @28
CHLOROBROMOMETHANE	135-CC28A-12.0-12.5	JC14857-30A	34	53	137	LOW	26	53	137	LOW	26	26	OK @26
CHLOROETHANE	135-CC28A-12.0-12.5	JC14857-30A	57	26	154	OK	54	26	154	OK	4	34	OK @34
VINYL CHLORIDE	135-CC28A-12.0-12.5	JC14857-30A	50	38	149	OK	47	38	149	OK	5	29	OK @29
DICHLOROMETHANE	135-CC28A-12.0-12.5	JC14857-30A	38	47	133	LOW	32	47	133	LOW	17	25	OK @25
CARBON DISULFIDE	135-CC28A-12.0-12.5	JC14857-30A	24	34	146	LOW	18	34	146	LOW	25	31	OK @31
TRIBROMOMETHANE	135-CC28A-12.0-12.5	JC14857-30A	8	39	148	LOW	15	39	148	LOW	53	24	>24
BROMODICHLOROMETHANE	135-CC28A-12.0-12.5	JC14857-30A	23	50	145	LOW	29	50	145	LOW	23	28	OK @28
1,1-DICHLOROETHANE	135-CC28A-12.0-12.5	JC14857-30A	62	54	137	OK	62	54	137	OK	1	28	OK @28
1,1-DICHLOROETHYLENE	135-CC28A-12.0-12.5	JC14857-30A	56	41	143	OK	50	41	143	OK	12	30	OK @30
TRICHLOROFLUOROMETHANE	135-CC28A-12.0-12.5	JC14857-30A	78	39	153	OK	86	39	153	OK	10	27	OK @27
DICHLORODIFLUOROMETHANE	135-CC28A-12.0-12.5	JC14857-30A	78	31	161	OK	84	31	161	OK	7	28	OK @28
1,1,2-TRICHLOROTRIFLUOROETHANE	135-CC28A-12.0-12.5	JC14857-30A	57	30	152	OK	66	30	152	OK	13	29	OK @29
1,2-DICHLOROPROPANE	135-CC28A-12.0-12.5	JC14857-30A	53	53	139	OK	52	53	139	LOW	2	27	OK @27
2-BUTANONE (MEK)	135-CC28A-12.0-12.5	JC14857-30A	57	26	164	OK	49	26	164	OK	15	30	OK @30
1,1,2-TRICHLOROETHANE	135-CC28A-12.0-12.5	JC14857-30A	45	43	146	OK	39	43	146	LOW	14	27	OK @27
TRICHLOROETHYLENE	135-CC28A-12.0-12.5	JC14857-30A	40	42	152	LOW	32	42	152	LOW	21	29	OK @29
METHYL ACETATE	135-CC28A-12.0-12.5	JC14857-30A	103	26	176	OK	83	26	176	OK	22	29	OK @29
1,1,2,2-TETRACHLOROETHANE	135-CC28A-12.0-12.5	JC14857-30A	44	31	149	OK	43	31	149	OK	3	25	OK @25
1,2,3-TRICHLOROBENZENE	135-CC28A-12.0-12.5	JC14857-30A	7	14	153	LOW	4	14	153	LOW	39	35	>35
O-XYLENE	135-CC28A-12.0-12.5	JC14857-30A	32	36	145	LOW	29	36	145	LOW	10	30	OK @30

Analyte	Spiked Sample	Spike Lab Sample	MS%R	Spike Lower Limit	Spike Upper Limit	MS Within Limits	MSD %R	Dup Lower Limit	Dup Upper Limit	MSD Within Limits	RPD (%)	RPD Limit	RPD status
1,2-DICHLOROBENZENE	135-CC28A-12.0-12.5	JC14857-30A	12	30	144	LOW	8	30	144	LOW	40	30	>30
1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	135-CC28A-12.0-12.5	JC14857-30A	28	29	145	LOW	28	29	145	LOW	0	26	OK @26
ISOPROPYLBENZENE	135-CC28A-12.0-12.5	JC14857-30A	39	36	145	OK	43	36	145	OK	10	33	OK @33
M+P-XYLENE	135-CC28A-12.0-12.5	JC14857-30A	29	32	148	LOW	25	32	148	LOW	16	30	OK @30
ETHYLBENZENE	135-CC28A-12.0-12.5	JC14857-30A	32	34	145	LOW	29	34	145	LOW	10	29	OK @29
STYRENE (MONOMER)	135-CC28A-12.0-12.5	JC14857-30A	11	32	156	LOW	7	32	156	LOW	44	31	>31
CIS-1,3-DICHLOROPROPENE	135-CC28A-12.0-12.5	JC14857-30A	4	41	144	LOW	4	41	144	LOW	10	26	OK @26
TRANS-1,3-DICHLOROPROPENE	135-CC28A-12.0-12.5	JC14857-30A	4	36	148	LOW	3	36	148	LOW	4	27	OK @27
1,4-DICHLOROBENZENE	135-CC28A-12.0-12.5	JC14857-30A	8	30	142	LOW	5	30	142	LOW	56	31	>31
1,2-DIBROMOETHANE(EDB)	135-CC28A-12.0-12.5	JC14857-30A	19	46	139	LOW	13	46	139	LOW	39	24	>24
1,2-DICHLOROETHANE	135-CC28A-12.0-12.5	JC14857-30A	36	56	140	LOW	27	56	140	LOW	28	24	>24
4-METHYL-2-PENTANONE (MIBK)	135-CC28A-12.0-12.5	JC14857-30A	54	33	154	OK	52	33	154	OK	3	29	OK @29
METHYLCYCLOHEXANE	135-CC28A-12.0-12.5	JC14857-30A	38	14	153	OK	44	14	153	OK	13	33	OK @33
TOLUENE	135-CC28A-12.0-12.5	JC14857-30A	33	40	141	LOW	28	40	141	LOW	18	30	OK @30
CHLOROBENZENE	135-CC28A-12.0-12.5	JC14857-30A	18	38	144	LOW	13	38	144	LOW	37	29	>29
CYCLOHEXANE	135-CC28A-12.0-12.5	JC14857-30A	53	22	154	OK	61	22	154	OK	14	33	OK @33

Laboratory Duplicate Results

Sample ID	Analyte	Sample Result (ug/kg)	Dup Result (ug/kg)	RPD (%)	Limits
135-BB35AR-15.0-15.5	Acetone	156	364	80	35
	2-Butanone (MEK)	ND	40.4	NC	30
	Carbon Disulfide	6.7	5.0	29	20

ND – Not detected > RL

NC – Not Calculable

VOC Field Duplicate Results (ug/kg)

Analyte	Lab Sample	Result	Lab Qual	RL	Dup Lab Sample	Dup Result	Dup Qual	Dup RL	RPD	RPD Status
CHLOROMETHANE	JC14857-28A	11	U	11	JC14857-29A	10	U	10		Both ND
CHLOROBROMOMETHANE	JC14857-28A	11	U	11	JC14857-29A	10	U	10		Both ND
CHLOROETHANE	JC14857-28A	11	U	11	JC14857-29A	10	U	10		Both ND
ETHYLBENZENE	JC14857-17A	1.3	U	1.3	JC14857-18A	1.3	U	1.3		Both ND
STYRENE (MONOMER)	JC14857-17A	2.5	U	2.5	JC14857-18A	2.6	U	2.6		Both ND
CIS-1,3-DICHLOROPROPENE	JC14857-17A	2.5	U	2.5	JC14857-18A	2.6	U	2.6		Both ND
TRANS-1,3-DICHLOROPROPENE	JC14857-17A	2.5	U	2.5	JC14857-18A	2.6	U	2.6		Both ND
1,4-DICHLOROBENZENE	JC14857-17A	1.3	U	1.3	JC14857-18A	1.3	U	1.3		Both ND
1,2-DIBROMOETHANE(EDB)	JC14857-17A	1.3	U	1.3	JC14857-18A	1.3	U	1.3		Both ND
1,4-DICHLOROBENZENE	JC14857-28A	2.3	U	2.3	JC14857-29A	2	U	2		Both ND
1,2-DIBROMOETHANE(EDB)	JC14857-28A	2.3	U	2.3	JC14857-29A	2	U	2		Both ND
1,2-DICHLOROETHANE	JC14857-28A	2.3	U	2.3	JC14857-29A	2	U	2		Both ND
4-METHYL-2-PENTANONE (MIBK)	JC14857-28A	11	U	11	JC14857-29A	10	U	10		Both ND
METHYLCYCLOHEXANE	JC14857-28A	40.4		4.6	JC14857-29A	2.5	J	4	##	**>35, Estimate (J)**
TOLUENE	JC14857-28A	2.3	U	2.3	JC14857-29A	2	U	2		Both ND
CHLOROBENZENE	JC14857-28A	4.6	U	4.6	JC14857-29A	4	U	4		Both ND
CYCLOHEXANE	JC14857-28A	5.8		4.6	JC14857-29A	0.68	J	4	##	**>35, Both <5X RL, Absolute Difference >RL; Estimate (J)**
1,2,4-TRICHLOROBENZENE	JC14857-28A	11	U	11	JC14857-29A	10	U	10		Both ND
CHLORODIBROMOMETHANE	JC14857-28A	4.6	U	4.6	JC14857-29A	4	U	4		Both ND
TETRACHLOROETHENE	JC14857-28A	4.6	U	4.6	JC14857-29A	4	U	4		Both ND
XYLENES	JC14857-28A	2.3	U	2.3	JC14857-29A	2	U	2		Both ND
CIS-1,2-DICHLOROETHENE	JC14857-28A	2.3	U	2.3	JC14857-29A	2	U	2		Both ND
TRANS-1,2-DICHLOROETHENE	JC14857-28A	2.3	U	2.3	JC14857-29A	2	U	2		Both ND

Analyte	Lab Sample	Result	Lab Qual	RL	Dup Lab Sample	Dup Result	Dup Qual	Dup RL	RPD	RPD Status
METHYL-TERT-BUTYL ETHER	JC14857-28A	0.82	J	2.3	JC14857-29A	0.61	J	2	29	OK @35
M-DICHLOROBENZENE	JC14857-28A	2.3	U	2.3	JC14857-29A	2	U	2		Both ND
CARBON TETRACHLORIDE	JC14857-28A	4.6	U	4.6	JC14857-29A	4	U	4		Both ND
METHYL N-BUTYL KETONE	JC14857-28A	11	U	11	JC14857-29A	10	U	10		Both ND
ACETONE	JC14857-28A	24.3		23	JC14857-29A	78.9		20	##	**>35, Both <5X RL, Absolute Difference >RL; Estimate (J)**
CHLOROFORM	JC14857-28A	4.6	U	4.6	JC14857-29A	4	U	4		Both ND
BENZENE	JC14857-28A	1.1	U	1.1	JC14857-29A	1	U	1		Both ND
1,1,1-TRICHLOROETHANE	JC14857-28A	4.6	U	4.6	JC14857-29A	4	U	4		Both ND
BROMOMETHANE	JC14857-28A	11	U	11	JC14857-29A	10	U	10		Both ND
1,2-DICHLOROETHANE	JC14857-17A	1.3	U	1.3	JC14857-18A	1.3	U	1.3		Both ND
4-METHYL-2-PENTANONE (MIBK)	JC14857-17A	6.3	U	6.3	JC14857-18A	6.4	U	6.4		Both ND
METHYLCYCLOHEXANE	JC14857-17A	2.5	U	2.5	JC14857-18A	2.6	U	2.6		Both ND
TOLUENE	JC14857-17A	1.3	U	1.3	JC14857-18A	1.3	U	1.3		Both ND
VINYL CHLORIDE	JC14857-28A	4.6	U	4.6	JC14857-29A	4	U	4		Both ND
DICHLOROMETHANE	JC14857-28A	11	U	11	JC14857-29A	10	U	10		Both ND
CARBON DISULFIDE	JC14857-28A	2.8	J	4.6	JC14857-29A	5.5		4	65	**>35, Both <5X RL, Absolute Difference <RL; Accept**
TRIBROMOMETHANE	JC14857-28A	11	U	11	JC14857-29A	10	U	10		Both ND
BROMODICHLOROMETHANE	JC14857-28A	4.6	U	4.6	JC14857-29A	4	U	4		Both ND
1,1-DICHLOROETHANE	JC14857-28A	2.3	U	2.3	JC14857-29A	2	U	2		Both ND
1,1-DICHLOROETHYLENE	JC14857-28A	2.3	U	2.3	JC14857-29A	2	U	2		Both ND
TRICHLOROFLUOROMETHANE	JC14857-28A	11	U	11	JC14857-29A	10	U	10		Both ND
DICHLORODIFLUOROMETHANE	JC14857-28A	11	U	11	JC14857-29A	10	U	10		Both ND

Analyte	Lab Sample	Result	Lab Qual	RL	Dup Lab Sample	Dup Result	Dup Qual	Dup RL	RPD	RPD Status
1,1,2-TRICHLOROTRIFLUOROETHANE	JC14857-28A	11	U	11	JC14857-29A	10	U	10		Both ND
1,2-DICHLOROPROPANE	JC14857-28A	4.6	U	4.6	JC14857-29A	4	U	4		Both ND
2-BUTANONE (MEK)	JC14857-28A	23	U	23	JC14857-29A	20	U	20		Both ND
1,1,2-TRICHLOROETHANE	JC14857-28A	4.6	U	4.6	JC14857-29A	4	U	4		Both ND
TRICHLOROETHYLENE	JC14857-28A	2.3	U	2.3	JC14857-29A	2	U	2		Both ND
METHYL ACETATE	JC14857-28A	11	U	11	JC14857-29A	10	U	10		Both ND
1,1,2,2-TETRACHLOROETHANE	JC14857-28A	4.6	U	4.6	JC14857-29A	4	U	4		Both ND
1,2,3-TRICHLOROBENZENE	JC14857-28A	11	U	11	JC14857-29A	10	U	10		Both ND
O-XYLENE	JC14857-28A	2.3	U	2.3	JC14857-29A	2	U	2		Both ND
1,2-DICHLOROBENZENE	JC14857-28A	2.3	U	2.3	JC14857-29A	2	U	2		Both ND
1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	JC14857-28A	4.6	U	4.6	JC14857-29A	4	U	4		Both ND
ISOPROPYLBENZENE	JC14857-28A	4.6	U	4.6	JC14857-29A	4	U	4		Both ND
M+P-XYLENE	JC14857-28A	2.3	U	2.3	JC14857-29A	2	U	2		Both ND
CHLOROBENZENE	JC14857-17A	2.5	U	2.5	JC14857-18A	2.6	U	2.6		Both ND
CYCLOHEXANE	JC14857-17A	2.5	U	2.5	JC14857-18A	2.6	U	2.6		Both ND
1,2,4-TRICHLOROBENZENE	JC14857-17A	6.3	U	6.3	JC14857-18A	6.4	U	6.4		Both ND
CHLORODIBROMOMETHANE	JC14857-17A	2.5	U	2.5	JC14857-18A	2.6	U	2.6		Both ND
TETRACHLOROETHENE	JC14857-17A	2.5	U	2.5	JC14857-18A	2.6	U	2.6		Both ND
XYLENES	JC14857-17A	1.3	U	1.3	JC14857-18A	1.3	U	1.3		Both ND
CIS-1,2-DICHLOROETHENE	JC14857-17A	1.3	U	1.3	JC14857-18A	1.3	U	1.3		Both ND
TRANS-1,2-DICHLOROETHENE	JC14857-17A	1.3	U	1.3	JC14857-18A	1.3	U	1.3		Both ND
METHYL-TERT-BUTYL ETHER	JC14857-17A	1.3	U	1.3	JC14857-18A	1.3	U	1.3		Both ND
M-DICHLOROBENZENE	JC14857-17A	1.3	U	1.3	JC14857-18A	1.3	U	1.3		Both ND
CARBON TETRACHLORIDE	JC14857-17A	2.5	U	2.5	JC14857-18A	2.6	U	2.6		Both ND
METHYL N-BUTYL KETONE	JC14857-17A	6.3	U	6.3	JC14857-18A	6.4	U	6.4		Both ND
ACETONE	JC14857-17A	13.6		13	JC14857-18A	13	U	13	NC	Detected <5X RL, Accept

Analyte	Lab Sample	Result	Lab Qual	RL	Dup Lab Sample	Dup Result	Dup Qual	Dup RL	RPD	RPD Status
CHLOROFORM	JC14857-17A	2.5	U	2.5	JC14857-18A	2.6	U	2.6		Both ND
BENZENE	JC14857-17A	0.63	U	0.6	JC14857-18A	0.64	U	0.64		Both ND
1,1,1-TRICHLOROETHANE	JC14857-17A	2.5	U	2.5	JC14857-18A	2.6	U	2.6		Both ND
BROMOMETHANE	JC14857-17A	6.3	U	6.3	JC14857-18A	6.4	U	6.4		Both ND
CHLOROMETHANE	JC14857-17A	6.3	U	6.3	JC14857-18A	6.4	U	6.4		Both ND
CHLOROBROMOMETHANE	JC14857-17A	6.3	U	6.3	JC14857-18A	6.4	U	6.4		Both ND
CHLOROETHANE	JC14857-17A	6.3	U	6.3	JC14857-18A	6.4	U	6.4		Both ND
VINYL CHLORIDE	JC14857-17A	2.5	U	2.5	JC14857-18A	2.6	U	2.6		Both ND
DICHLOROMETHANE	JC14857-17A	6.3	U	6.3	JC14857-18A	6.4	U	6.4		Both ND
CARBON DISULFIDE	JC14857-17A	1.3	J	2.5	JC14857-18A	1	J	2.6	26	OK @35
TRIBROMOMETHANE	JC14857-17A	6.3	U	6.3	JC14857-18A	6.4	U	6.4		Both ND
BROMODICHLOROMETHANE	JC14857-17A	2.5	U	2.5	JC14857-18A	2.6	U	2.6		Both ND
1,1-DICHLOROETHANE	JC14857-17A	1.3	U	1.3	JC14857-18A	1.3	U	1.3		Both ND
1,1-DICHLOROETHYLENE	JC14857-17A	1.3	U	1.3	JC14857-18A	1.3	U	1.3		Both ND
TRICHLOROFLUOROMETHANE	JC14857-17A	6.3	U	6.3	JC14857-18A	6.4	U	6.4		Both ND
DICHLORODIFLUOROMETHANE	JC14857-17A	6.3	U	6.3	JC14857-18A	6.4	U	6.4		Both ND
1,1,2-TRICHLOROTRIFLUOROETHANE	JC14857-17A	6.3	U	6.3	JC14857-18A	6.4	U	6.4		Both ND
1,2-DICHLOROPROPANE	JC14857-17A	2.5	U	2.5	JC14857-18A	2.6	U	2.6		Both ND
2-BUTANONE (MEK)	JC14857-17A	13	U	13	JC14857-18A	13	U	13		Both ND
1,1,2-TRICHLOROETHANE	JC14857-17A	2.5	U	2.5	JC14857-18A	2.6	U	2.6		Both ND
TRICHLOROETHYLENE	JC14857-17A	1.3	U	1.3	JC14857-18A	1.3	U	1.3		Both ND
METHYL ACETATE	JC14857-17A	6.3	U	6.3	JC14857-18A	6.4	U	6.4		Both ND
1,1,2,2-TETRACHLOROETHANE	JC14857-17A	2.5	U	2.5	JC14857-18A	2.6	U	2.6		Both ND
1,2,3-TRICHLOROBENZENE	JC14857-17A	6.3	U	6.3	JC14857-18A	6.4	U	6.4		Both ND
O-XYLENE	JC14857-17A	1.3	U	1.3	JC14857-18A	1.3	U	1.3		Both ND
1,2-DICHLOROBENZENE	JC14857-17A	1.3	U	1.3	JC14857-18A	1.3	U	1.3		Both ND
1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	JC14857-17A	2.5	U	2.5	JC14857-18A	2.6	U	2.6		Both ND

Analyte	Lab Sample	Result	Lab Qual	RL	Dup Lab Sample	Dup Result	Dup Qual	Dup RL	RPD	RPD Status
ISOPROPYLBENZENE	JC14857-17A	2.5	U	2.5	JC14857-18A	2.6	U	2.6		Both ND
M+P-XYLENE	JC14857-17A	1.3	U	1.3	JC14857-18A	1.3	U	1.3		Both ND
ETHYLBENZENE	JC14857-28A	2.3	U	2.3	JC14857-29A	2	U	2		Both ND
STYRENE (MONOMER)	JC14857-28A	4.6	U	4.6	JC14857-29A	4	U	4		Both ND
CIS-1,3-DICHLOROPROPENE	JC14857-28A	4.6	U	4.6	JC14857-29A	4	U	4		Both ND
TRANS-1,3-DICHLOROPROPENE	JC14857-28A	4.6	U	4.6	JC14857-29A	4	U	4		Both ND

Client Name: PPG Industries	**Project Number:** 60314351.GA.DE.PDI.P3
Site Location: Narula/Smith Site 135 PDI Soil Sampling, Jersey City, NJ	**Project Manager:** Scott Mikaelian
Laboratory: Accutest, Dayton, NJ	**Type of Validation:** Limited
Laboratory Job No: JC14857A	**Date Checked:** 3/22/2016
Validator: Sharon McKechnie	**Peer:** Dion Lewis and Dawn Brule

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X			
Field I.D. included?	X			
Laboratory I.D. included?	X			
Did data package sample IDs match sample IDs on COC?		X		All IDs 135-BB35AR-xxx were missing the “R” in data packages
Did electronic data deliverable (EDD) sample IDs match COC sample IDs?		X		See above
Did data package sample IDs match electronic data deliverable (EDD) sample IDs?		X		See above. EDD correct, COC and data pkgs incorrect
Sample matrix included?	X			
Sample receipt temperature 2-6C?	X			
Signed COCs included?	X			
Date of sample collection included?	X			
Date of sample extraction included?	X			
Date of analysis included?	X			
Holding time to analysis met criteria	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			
Definitions: MDL - Method Detection Limit; %R - Percent Recovery; RL - Reporting Limit; RPD - Relative Percent Difference; RSD - Relative Standard Deviation :Corr - Correlation Coefficient.				

ITEM	YES	NO	N/A	COMMENTS
Sample dilutions?	X			
Method Blank Included in Lab Package?	X			
1) Method blank analyzed with each preparation batch?	X			
2) Absolute value should not exceed RL.	X			
Trip Blanks/Field Blanks/Equipment Blanks Included in Lab Package?	X			
1) TB/FB/EB results non-detect?	X			
Surrogate Data Included?	X			
1) Is %R criteria (laboratory criteria) met?		X		See nonconformance tables.
Matrix Spike/Matrix Spike Duplicate Data Included in Lab Package?	X			
1) %R and RPD (laboratory criteria) met?		X		See nonconformance tables.
2) Was the spike concentration at the same concentration as the LCS?	X			
3) Was a sample spiked at the frequency of 1 per 20 samples?	X			
Was a Laboratory Control Sample (LCS) Included in Lab Package?	X			
1) LCS %R criteria met? (laboratory criteria)	X			
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples?	X			
Field Duplicate Data included in Lab Package?	X			
1) %RPD criteria (Reg 2 criteria) met?		X		See nonconformance tables.
Percent Solids data included in Lab Package?	X			
1) %Solids criteria (Reg 2 criteria) met? (>/=50%)		X		See nonconformance tables.

Matrix Spike Results

Analyte	Lab ID	MS %R	Spike Lower Limit	Spike Upper Limit	Spike Within Limits	MSD %R	Dup Lower Limit	Dup Upper Limit	Dup Within Limits	RPD %	RPD Limit	RPD status
BIS(-2-CHLOROETHOXY)METHANE	JC14857-30A	72	32	116	OK	76	32	116	OK	5	33	OK @33
BIS(2-ETHYLHEXYL)PHTHALATE	JC14857-30A	97	25	146	OK	88	25	146	OK	9	35	OK @35
DI-N-OCTYL PHTHALATE	JC14857-30A	94	28	144	OK	84	28	144	OK	11	35	OK @35
HEXACHLOROBENZENE	JC14857-30A	83	34	125	OK	73	34	125	OK	12	34	OK @34
ANTHRACENE	JC14857-30A	77	31	131	OK	69	31	131	OK	12	41	OK @41
2,4-DICHLOROPHENOL	JC14857-30A	73	25	122	OK	72	25	122	OK	2	34	OK @34
2,4-DINITROTOLUENE	JC14857-30A	45	28	126	OK	48	28	126	OK	6	36	OK @36
1,4-DIOXANE	JC14857-30A	44	10	110	OK	50	10	110	OK	14	38	OK @38
PYRENE	JC14857-30A	81	16	147	OK	73	16	147	OK	10	46	OK @46
DIMETHYL PHTHALATE	JC14857-30A	86	36	121	OK	81	36	121	OK	6	33	OK @33
DIBENZOFURAN	JC14857-30A	78	30	125	OK	72	30	125	OK	8	35	OK @35
BENZO(G,H,I)PERYLENE	JC14857-30A	61	20	138	OK	56	20	138	OK	8	43	OK @43
NITROBENZENE	JC14857-30A	63	28	118	OK	68	28	118	OK	8	32	OK @32
3-NITROANILINE	JC14857-30A	34	12	112	OK	40	12	112	OK	16	38	OK @38
ATRAZINE	JC14857-30A	58	34	138	OK	51	34	138	OK	13	36	OK @36
INDENO(1,2,3-CD)PYRENE	JC14857-30A	61	23	141	OK	57	23	141	OK	6	44	OK @44
BENZO(B)FLUORANTHENE	JC14857-30A	67	18	145	OK	58	18	145	OK	14	43	OK @43
FLUORANTHENE	JC14857-30A	74	15	143	OK	65	15	143	OK	12	46	OK @46
BENZO(K)FLUORANTHENE	JC14857-30A	65	27	129	OK	60	27	129	OK	9	43	OK @43
ACENAPHTHYLENE	JC14857-30A	77	28	113	OK	68	28	113	OK	13	34	OK @34
CHRYSENE	JC14857-30A	66	21	142	OK	61	21	142	OK	7	43	OK @43
BENZO(A)PYRENE	JC14857-30A	62	22	144	OK	56	22	144	OK	9	42	OK @42
2,4-DINITROPHENOL	JC14857-30A	0	10	110	LOW	0	10	110	LOW	0	51	OK @51

Analyte	Lab ID	MS %R	Spike Lower Limit	Spike Upper Limit	Spike Within Limits	MSD %R	Dup Lower Limit	Dup Upper Limit	Dup Within Limits	RPD %	RPD Limit	RPD status
DIBENZO(A,H)ANTHRACENE	JC14857-30A	58	25	135	OK	54	25	135	OK	5	41	OK @41
4,6-DINITRO-2-METHYLPHENOL	JC14857-30A	0	10	113	LOW	0	10	113	LOW	0	49	OK @49
BENZO(A)ANTHRACENE	JC14857-30A	67	23	136	OK	61	23	136	OK	9	43	OK @43
2,3,4,6-Tetrachlorophenol	JC14857-30A	78	19	125	OK	72	19	125	OK	8	37	OK @37
4-CHLORO-3-METHYLPHENOL	JC14857-30A	83	27	124	OK	77	27	124	OK	7	34	OK @34
2,6-DINITROTOLUENE	JC14857-30A	53	31	126	OK	54	31	126	OK	2	34	OK @34
N-NITROSO-DI-N-PROPYLAMINE	JC14857-30A	73	26	121	OK	75	26	121	OK	3	34	OK @34
P-NITROANILINE	JC14857-30A	34	21	117	OK	37	21	117	OK	10	38	OK @38
4-NITROPHENOL	JC14857-30A	86	14	154	OK	83	14	154	OK	4	39	OK @39
BENZALDEHYDE	JC14857-30A	63	20	129	OK	69	20	129	OK	8	34	OK @34
4-BROMOPHENYL PHENYL ETHER	JC14857-30A	87	39	124	OK	80	39	124	OK	8	33	OK @33
CAPROLACTAM	JC14857-30A	96	18	127	OK	87	18	127	OK	9	35	OK @35
HEXACHLOROETHANE	JC14857-30A	8	21	109	LOW	14	21	109	LOW	55	38	>38
4-CHLOROPHENYL PHENYL ETHER	JC14857-30A	76	38	119	OK	72	38	119	OK	5	33	OK @33
HEXACHLOROCYCLOPENTADIENE	JC14857-30A	0	10	127	LOW	0	10	127	LOW	0	46	OK @46
3,5,5-TRIMETHYL-2-CYCLOHEXENE-1-ONE	JC14857-30A	81	31	124	OK	84	31	124	OK	4	32	OK @32
ACENAPHTHENE	JC14857-30A	86	34	125	OK	79	34	125	OK	8	36	OK @36
DIETHYL PHTHALATE	JC14857-30A	88	35	124	OK	83	35	124	OK	6	32	OK @32
DI-N-BUTYLPHTHALATE	JC14857-30A	93	32	131	OK	85	32	131	OK	9	34	OK @34
PHENANTHRENE	JC14857-30A	81	14	144	OK	71	14	144	OK	11	44	OK @44
BENZYL BUTYL PHTHALATE	JC14857-30A	98	27	143	OK	91	27	143	OK	7	35	OK @35
N-NITROSODIPHENYLAMINE	JC14857-30A	90	24	142	OK	83	24	142	OK	8	35	OK @35
FLUORENE	JC14857-30A	79	30	129	OK	72	30	129	OK	9	37	OK @37

Analyte	Lab ID	MS %R	Spike Lower Limit	Spike Upper Limit	Spike Within Limits	MSD %R	Dup Lower Limit	Dup Upper Limit	Dup Within Limits	RPD %	RPD Limit	RPD status
CARBAZOLE	JC14857-30A	80	27	129	OK	71	27	129	OK	11	38	OK @38
HEXACHLORO-1,3-BUTADIENE	JC14857-30A	62	29	120	OK	69	29	120	OK	10	34	OK @34
PENTACHLOROPHENOL	JC14857-30A	68	10	131	OK	53	10	131	OK	25	43	OK @43
2,4,6-TRICHLOROPHENOL	JC14857-30A	80	26	126	OK	73	26	126	OK	9	35	OK @35
2-NITROANILINE	JC14857-30A	83	29	138	OK	75	29	138	OK	9	33	OK @33
2-NITROPHENOL	JC14857-30A	16	17	118	LOW	27	17	118	OK	54	37	>37
NAPHTHALENE	JC14857-30A	72	24	118	OK	78	24	118	OK	7	35	OK @35
2-METHYLNAPHTHALENE	JC14857-30A	73	21	125	OK	72	21	125	OK	1	33	OK @33
2-CHLORONAPHTHALENE	JC14857-30A	77	38	110	OK	74	38	110	OK	3	32	OK @32
3,3'-DICHLOROBENZIDINE	JC14857-30A	21	10	115	OK	25	10	115	OK	15	44	OK @44
1-1'-BIPHENYL	JC14857-30A	84	33	116	OK	79	33	116	OK	5	32	OK @32
2-METHYLPHENOL	JC14857-30A	79	32	111	OK	76	32	111	OK	3	34	OK @34
2-CHLOROPHENOL	JC14857-30A	65	33	106	OK	70	33	106	OK	7	35	OK @35
1,2,4,5-TETRACHLOROBENZENE	JC14857-30A	64	37	115	OK	64	37	115	OK	0	32	OK @32
2,4,5-TRICHLOROPHENOL	JC14857-30A	79	30	125	OK	72	30	125	OK	9	35	OK @35
ACETOPHENONE	JC14857-30A	69	26	120	OK	74	26	120	OK	6	34	OK @34
2,4-DIMETHYLPHENOL	JC14857-30A	91	23	133	OK	89	23	133	OK	2	34	OK @34
3+4-METHYLPHENOL	JC14857-30A	96	32	113	OK	75	32	113	OK	14	34	OK @34
P-CHLOROANILINE	JC14857-30A	41	10	110	OK	40	10	110	OK	0	49	OK @49
2,2'-OXYBIS(1-CHLOROPROPANE)	JC14857-30A	56	28	110	OK	64	28	110	OK	13	33	OK @33
PHENOL	JC14857-30A	69	25	112	OK	69	25	112	OK	0	33	OK @33
BIS(2-CHLOROETHYL)ETHER	JC14857-30A	77	30	113	OK	84	30	113	OK	9	37	OK @37

Surrogate Results

SampleID	Lab Sample ID	Test Type	Analyte	Recovery %	Lower Limit	Upper Limit	Status
135-BB36A-1.5-2.0	JC14857-20A	Initial	2,4,6-TRIBROMOPHENOL	82	24	140	OK
135-BB36A-1.5-2.0	JC14857-20A	Initial	TERPHENYL-D14	73	36	132	OK
135-BB36A-1.5-2.0	JC14857-20A	Initial	2-FLUOROBIPHENYL	77	36	112	OK
135-BB36A-1.5-2.0	JC14857-20A	Initial	2-FLUOROPHENOL	78	30	106	OK
135-BB36A-1.5-2.0	JC14857-20A	Initial	NITROBENZENE-D5	79	26	122	OK
135-BB36A-1.5-2.0	JC14857-20A	Initial	Phenol-d5	81	30	106	OK
135-BB36A-1.5-2.0	JC14857-20A	Dilution	2,4,6-TRIBROMOPHENOL	0	24	140	LOW
135-BB36A-1.5-2.0	JC14857-20A	Dilution	TERPHENYL-D14	0	36	132	LOW
135-BB36A-1.5-2.0	JC14857-20A	Dilution	2-FLUOROBIPHENYL	0	36	112	LOW
135-BB36A-1.5-2.0	JC14857-20A	Dilution	2-FLUOROPHENOL	0	30	106	LOW
135-BB36A-1.5-2.0	JC14857-20A	Dilution	NITROBENZENE-D5	0	26	122	LOW
135-BB36A-1.5-2.0	JC14857-20A	Dilution	Phenol-d5	0	30	106	LOW
135-BB36A-14.0-14.5	JC14857-23A	Initial	TERPHENYL-D14	37	36	132	OK
135-BB36A-14.0-14.5	JC14857-23A	Initial	2-FLUOROBIPHENYL	33	36	112	LOW
135-BB36A-14.0-14.5	JC14857-23A	Initial	2-FLUOROPHENOL	32	30	106	OK
135-BB36A-14.0-14.5	JC14857-23A	Initial	NITROBENZENE-D5	32	26	122	OK
135-BB36A-14.0-14.5	JC14857-23A	Initial	Phenol-d5	32	30	106	OK
135-BB36A-14.0-14.5	JC14857-23A	Initial	2,4,6-TRIBROMOPHENOL	36	24	140	OK
135-BB36A-14.0-14.5	JC14857-23A	Confirmation Run	Phenol-d5	20	30	106	LOW
135-BB36A-14.0-14.5	JC14857-23A	Confirmation Run	2-FLUOROPHENOL	22	30	106	LOW
135-BB36A-14.0-14.5	JC14857-23A	Confirmation Run	2,4,6-TRIBROMOPHENOL	21	24	140	LOW
135-BB36A-14.0-14.5	JC14857-23A	Confirmation Run	NITROBENZENE-D5	26	26	122	OK
135-BB36A-14.0-14.5	JC14857-23A	Confirmation Run	2-FLUOROBIPHENYL	23	36	112	LOW
135-BB36A-14.0-14.5	JC14857-23A	Confirmation Run	TERPHENYL-D14	27	36	132	LOW

SVOC Field Duplicate Results (ug/kg)

Analyte	Lab Sample	Result	Lab Qual	RL	Dup Lab Sample	Dup Result	Dup Lab Qual	Dup RL	*RPD*	*RPD Status*
P-NITROANILINE	JC14857-28A	310	U	310	JC14857-29A	270	U	270		Both ND
4-NITROPHENOL	JC14857-28A	610	U	610	JC14857-29A	540	U	540		Both ND
BENZALDEHYDE	JC14857-28A	157	J	310	JC14857-29A	210	J	270	28.9	OK @35
4-BROMOPHENYL PHENYL ETHER	JC14857-28A	120	U	120	JC14857-29A	110	U	110		Both ND
CAPROLACTAM	JC14857-28A	120	U	120	JC14857-29A	110	U	110		Both ND
2,4-DIMETHYLPHENOL	JC14857-28A	310	U	310	JC14857-29A	270	U	270		Both ND
3+4-METHYLPHENOL	JC14857-28A	960		120	JC14857-29A	1460		110	41.3	**>35, Estimate (J)**
P-CHLOROANILINE	JC14857-28A	310	U	310	JC14857-29A	270	U	270		Both ND
2,2'-OXYBIS(1-CHLOROPROPANE)	JC14857-28A	120	U	120	JC14857-29A	110	U	110		Both ND
PHENOL	JC14857-28A	120	U	120	JC14857-29A	110	U	110		Both ND
BIS(2-CHLOROETHYL)ETHER	JC14857-28A	120	U	120	JC14857-29A	110	U	110		Both ND
BIS(-2-CHLOROETHOXY)METHANE	JC14857-28A	120	U	120	JC14857-29A	110	U	110		Both ND
BIS(2-ETHYLHEXYL)PHTHALATE	JC14857-28A	120	U	120	JC14857-29A	110	U	110		Both ND
DI-N-OCTYL PHTHALATE	JC14857-28A	120	U	120	JC14857-29A	110	U	110		Both ND
HEXACHLOROBENZENE	JC14857-28A	120	U	120	JC14857-29A	110	U	110		Both ND
ANTHRACENE	JC14857-28A	81.3		61	JC14857-29A	45.6	J	54	56.3	>35; Both <5X RL, Absolute Difference <RL; Accept
2,4-DICHLOROPHENOL	JC14857-28A	310	U	310	JC14857-29A	270	U	270		Both ND
2,4-DINITROTOLUENE	JC14857-28A	61	U	61	JC14857-29A	54	U	54		Both ND
1,4-DIOXANE	JC14857-28A	61	U	61	JC14857-29A	54	U	54		Both ND
BENZO(A)ANTHRACENE	JC14857-28A	122		61	JC14857-29A	41.4	J	54	98.7	**>35; Both <5X RL, Absolute Difference >RL; Estimate (J)**

Analyte	Lab Sample	Result	Lab Qual	RL	Dup Lab Sample	Dup Result	Dup Lab Qual	Dup RL	*RPD*	*RPD Status*
DIMETHYL PHTHALATE	JC14857-28A	120	U	120	JC14857-29A	110	U	110		Both ND
DIBENZOFURAN	JC14857-28A	120	U	120	JC14857-29A	35.7	J	110	NC	RPD NC, Detected <5X RL, Accept
BENZO(G,H,I)PERYLENE	JC14857-28A	52.2	J	61	JC14857-29A	54	U	54	NC	RPD NC, Detected <5X RL, Accept
ATRAZINE	JC14857-28A	120	U	120	JC14857-29A	110	U	110		Both ND
INDENO(1,2,3-CD)PYRENE	JC14857-28A	43	J	61	JC14857-29A	54	U	54	NC	RPD NC, Detected <5X RL, Accept
BENZO(A)PYRENE	JC14857-28A	83		61	JC14857-29A	24.2	J	54	109.7	**>35; Both <5X RL, Absolute Difference >RL; Estimate (J)**
BENZO(B)FLUORANTHENE	JC14857-28A	93.8		61	JC14857-29A	40	J	54	80.4	>35; Absolute Difference <RL; Accept
BENZO(K)FLUORANTHENE	JC14857-28A	29.8	J	61	JC14857-29A	54	U	54	NC	RPD NC, Detected <5X RL, Accept
ACENAPHTHYLENE	JC14857-28A	61	U	61	JC14857-29A	37.1	J	54	NC	RPD NC, Detected <5X RL, Accept
CHRYSENE	JC14857-28A	173		61	JC14857-29A	53.3	J	54	105.8	**>35; Both <5X RL, Absolute Difference >RL; Estimate (J)**
FLUORANTHENE	JC14857-28A	198		61	JC14857-29A	111		54	56.3	**>35; Both <5X RL, Absolute Difference >RL; Estimate (J)**
2,4-DINITROPHENOL	JC14857-28A	310	U	310	JC14857-29A	270	U	270		Both ND
DIBENZO(A,H)ANTHRACENE	JC14857-28A	61	U	61	JC14857-29A	54	U	54		Both ND
4,6-DINITRO-2-METHYLPHENOL	JC14857-28A	310	U	310	JC14857-29A	270	U	270		Both ND

Analyte	Lab Sample	Result	Lab Qual	RL	Dup Lab Sample	Dup Result	Dup Lab Qual	Dup RL	*RPD*	*RPD Status*
PHENANTHRENE	JC14857-28A	459		61	JC14857-29A	231		54	66.1	**>35 Estimate (J)**
2,3,4,6-Tetrachlorophenol	JC14857-28A	310	U	310	JC14857-29A	270	U	270		Both ND
4-CHLORO-3-METHYLPHENOL	JC14857-28A	310	U	310	JC14857-29A	270	U	270		Both ND
2,6-DINITROTOLUENE	JC14857-28A	61	U	61	JC14857-29A	54	U	54		Both ND
N-NITROSO-DI-N-PROPYLAMINE	JC14857-28A	120	U	120	JC14857-29A	110	U	110		Both ND
HEXACHLOROETHANE	JC14857-28A	310	U	310	JC14857-29A	270	U	270		Both ND
4-CHLOROPHENYL PHENYL ETHER	JC14857-28A	120	U	120	JC14857-29A	110	U	110		Both ND
HEXACHLOROCYCLOPENTADIENE	JC14857-28A	610	U	610	JC14857-29A	540	U	540		Both ND
3,5,5-TRIMETHYL-2-CYCLOHEXENE-1-ONE	JC14857-28A	120	U	120	JC14857-29A	110	U	110		Both ND
ACENAPHTHENE	JC14857-28A	74.7		61	JC14857-29A	54	U	54	NC	RPD NC, Detected <5X RL, Accept
DIETHYL PHTHALATE	JC14857-28A	120	U	120	JC14857-29A	110	U	110		Both ND
DI-N-BUTYLPHTHALATE	JC14857-28A	120	U	120	JC14857-29A	110	U	110		Both ND
PYRENE	JC14857-28A	339		61	JC14857-29A	131		54	88.5	**>35 Estimate (J)**
BENZYL BUTYL PHTHALATE	JC14857-28A	120	U	120	JC14857-29A	110	U	110		Both ND
N-NITROSODIPHENYLAMINE	JC14857-28A	310	U	310	JC14857-29A	270	U	270		Both ND
FLUORENE	JC14857-28A	108		61	JC14857-29A	65.3		54	49.3	>35, Both <5X RL, Absolute Difference <RL, Accept
CARBAZOLE	JC14857-28A	120	U	120	JC14857-29A	21.5	J	110	NC	RPD NC, Detected <5X RL, Accept
HEXACHLORO-1,3-BUTADIENE	JC14857-28A	61	U	61	JC14857-29A	54	U	54		Both ND
PENTACHLOROPHENOL	JC14857-28A	310	U	310	JC14857-29A	270	U	270		Both ND
2,4,6-TRICHLOROPHENOL	JC14857-28A	310	U	310	JC14857-29A	270	U	270		Both ND
2-NITROANILINE	JC14857-28A	310	U	310	JC14857-29A	270	U	270		Both ND
2-NITROPHENOL	JC14857-28A	310	U	310	JC14857-29A	270	U	270		Both ND

Analyte	Lab Sample	Result	Lab Quall	RL	Dup Lab Sample	Dup Result	Dup Lab Quall	Dup RL	*RPD*	*RPD Status*
NAPHTHALENE	JC14857-28A	403		61	JC14857-29A	510		54	23.4	OK @35
2-METHYLNAPHTHALENE	JC14857-28A	120		120	JC14857-29A	127		110	5.7	OK @35
2-CHLORONAPHTHALENE	JC14857-28A	120	U	120	JC14857-29A	110	U	110		Both ND
3,3'-DICHLOROBENZIDINE	JC14857-28A	120	U	120	JC14857-29A	110	U	110		Both ND
1-1'-BIPHENYL	JC14857-28A	120	U	120	JC14857-29A	110	U	110		Both ND
2-METHYLPHENOL	JC14857-28A	120	U	120	JC14857-29A	110	U	110		Both ND
P-NITROANILINE	JC14857-17A	250	U	250	JC14857-18A	200	U	200		Both ND
4-NITROPHENOL	JC14857-17A	500	U	500	JC14857-18A	410	U	410		Both ND
BENZALDEHYDE	JC14857-17A	250	U	250	JC14857-18A	200	U	200		Both ND
4-BROMOPHENYL PHENYL ETHER	JC14857-17A	100	U	100	JC14857-18A	81	U	81		Both ND
CAPROLACTAM	JC14857-17A	100	U	100	JC14857-18A	81	U	81		Both ND
2,4-DIMETHYLPHENOL	JC14857-17A	250	U	250	JC14857-18A	200	U	200		Both ND
3+4-METHYLPHENOL	JC14857-17A	100	U	100	JC14857-18A	81	U	81		Both ND
P-CHLOROANILINE	JC14857-17A	250	U	250	JC14857-18A	200	U	200		Both ND
2,2'-OXYBIS(1-CHLOROPROPANE)	JC14857-17A	100	U	100	JC14857-18A	81	U	81		Both ND
PHENOL	JC14857-17A	100	U	100	JC14857-18A	81	U	81		Both ND
BIS(2-CHLOROETHYL)ETHER	JC14857-17A	100	U	100	JC14857-18A	81	U	81		Both ND
BIS(-2-CHLOROETHOXY)METHANE	JC14857-17A	100	U	100	JC14857-18A	81	U	81		Both ND
BIS(2-ETHYLHEXYL)PHTHALATE	JC14857-17A	100	U	100	JC14857-18A	81	U	81		Both ND
DI-N-OCTYL PHTHALATE	JC14857-17A	100	U	100	JC14857-18A	81	U	81		Both ND
HEXACHLOROBENZENE	JC14857-17A	100	U	100	JC14857-18A	81	U	81		Both ND
ANTHRACENE	JC14857-17A	50	U	50	JC14857-18A	41	U	41		Both ND
2,4-DICHLOROPHENOL	JC14857-17A	250	U	250	JC14857-18A	200	U	200		Both ND
2,4-DINITROTOLUENE	JC14857-17A	50	U	50	JC14857-18A	41	U	41		Both ND
1,4-DIOXANE	JC14857-17A	50	U	50	JC14857-18A	41	U	41		Both ND

Analyte	Lab Sample	Result	Lab Quall	RL	Dup Lab Sample	Dup Result	Dup Lab Quall	Dup RL	*RPD*	*RPD Status*
PYRENE	JC14857-17A	60.1		50	JC14857-18A	40.7	J	41	38.5	>35, Both <5X RL, Absolute Difference <RL, Accept
DIMETHYL PHTHALATE	JC14857-17A	100	U	100	JC14857-18A	81	U	81		Both ND
DIBENZOFURAN	JC14857-17A	100	U	100	JC14857-18A	81	U	81		Both ND
BENZO(G,H,I)PERYLENE	JC14857-17A	50	U	50	JC14857-18A	41	U	41		Both ND
ATRAZINE	JC14857-17A	100	U	100	JC14857-18A	81	U	81		Both ND
INDENO(1,2,3-CD)PYRENE	JC14857-17A	50	U	50	JC14857-18A	41	U	41		Both ND
BENZO(B)FLUORANTHENE	JC14857-17A	32.2	J	50	JC14857-18A	18.5	J	41	54	>35; Both <5X RL, Absolute Difference <RL; Accept
FLUORANTHENE	JC14857-17A	54.5		50	JC14857-18A	35.6	J	41	42	>35, Both <5X RL, Absolute Difference <RL, Accept
BENZO(K)FLUORANTHENE	JC14857-17A	20	J	50	JC14857-18A	41	U	41	NC	RPD NC, Detected <5X RL, Accept
ACENAPHTHYLENE	JC14857-17A	50	U	50	JC14857-18A	41	U	41		Both ND
CHRYSENE	JC14857-17A	31.7	J	50	JC14857-18A	31	J	41	2.2	OK @35
BENZO(A)PYRENE	JC14857-17A	22.8	J	50	JC14857-18A	17.9	J	41	24.1	OK @35
2,4-DINITROPHENOL	JC14857-17A	250	U	250	JC14857-18A	200	U	200		Both ND
DIBENZO(A,H)ANTHRACENE	JC14857-17A	50	U	50	JC14857-18A	41	U	41		Both ND
4,6-DINITRO-2-METHYLPHENOL	JC14857-17A	250	U	250	JC14857-18A	200	U	200		Both ND
BENZO(A)ANTHRACENE	JC14857-17A	33.3	J	50	JC14857-18A	22.8	J	41	37.4	>35, Both <5X RL, Absolute Difference <RL, Accept
2,3,4,6-Tetrachlorophenol	JC14857-17A	250	U	250	JC14857-18A	200	U	200		Both ND
4-CHLORO-3-METHYLPHENOL	JC14857-17A	250	U	250	JC14857-18A	200	U	200		Both ND

Analyte	Lab Sample	Result	Lab Quall	RL	Dup Lab Sample	Dup Result	Dup Lab Quall	Dup RL	*RPD*	*RPD Status*
2,6-DINITROTOLUENE	JC14857-17A	50	U	50	JC14857-18A	41	U	41		Both ND
N-NITROSO-DI-N-PROPYLAMINE	JC14857-17A	100	U	100	JC14857-18A	81	U	81		Both ND
HEXACHLOROETHANE	JC14857-17A	250	U	250	JC14857-18A	200	U	200		Both ND
4-CHLOROPHENYL PHENYL ETHER	JC14857-17A	100	U	100	JC14857-18A	81	U	81		Both ND
HEXACHLOROCYCLOPENTADIENE	JC14857-17A	500	U	500	JC14857-18A	410	U	410		Both ND
3,5,5-TRIMETHYL-2-CYCLOHEXENE-1-ONE	JC14857-17A	100	U	100	JC14857-18A	81	U	81		Both ND
ACENAPHTHENE	JC14857-17A	50	U	50	JC14857-18A	41	U	41		Both ND
DIETHYL PHTHALATE	JC14857-17A	100	U	100	JC14857-18A	81	U	81		Both ND
DI-N-BUTYLPHTHALATE	JC14857-17A	100	U	100	JC14857-18A	81	U	81		Both ND
PHENANTHRENE	JC14857-17A	46.1	J	50	JC14857-18A	27.4	J	41	50.9	>35; Both <5X RL, Absolute Difference <RL; Accept
BENZYL BUTYL PHTHALATE	JC14857-17A	100	U	100	JC14857-18A	81	U	81		Both ND
N-NITROSODIPHENYLAMINE	JC14857-17A	250	U	250	JC14857-18A	200	U	200		Both ND
FLUORENE	JC14857-17A	50	U	50	JC14857-18A	41	U	41		Both ND
CARBAZOLE	JC14857-17A	100	U	100	JC14857-18A	81	U	81		Both ND
HEXACHLORO-1,3-BUTADIENE	JC14857-17A	50	U	50	JC14857-18A	41	U	41		Both ND
PENTACHLOROPHENOL	JC14857-17A	250	U	250	JC14857-18A	200	U	200		Both ND
2,4,6-TRICHLOROPHENOL	JC14857-17A	250	U	250	JC14857-18A	200	U	200		Both ND
2-NITROANILINE	JC14857-17A	250	U	250	JC14857-18A	200	U	200		Both ND
2-NITROPHENOL	JC14857-17A	250	U	250	JC14857-18A	200	U	200		Both ND
NAPHTHALENE	JC14857-17A	50	U	50	JC14857-18A	41	U	41		Both ND
2-METHYLNAPHTHALENE	JC14857-17A	100	U	100	JC14857-18A	81	U	81		Both ND
2-CHLOROPHENOL	JC14857-28A	120	U	120	JC14857-29A	110	U	110		Both ND
1,2,4,5-TETRACHLOROBENZENE	JC14857-28A	310	U	310	JC14857-29A	270	U	270		Both ND

Analyte	Lab Sample	Result	Lab Quall	RL	Dup Lab Sample	Dup Result	Dup Lab Quall	Dup RL	*RPD*	*RPD Status*
2,4,5-TRICHLOROPHENOL	JC14857-28A	310	U	310	JC14857-29A	270	U	270		Both ND
ACETOPHENONE	JC14857-28A	310	U	310	JC14857-29A	84.5	J	270	NC	RPD NC, Detected <5X RL; Accept
NITROBENZENE	JC14857-28A	120	U	120	JC14857-29A	110	U	110		Both ND
3-NITROANILINE	JC14857-28A	310	U	310	JC14857-29A	270	U	270		Both ND
2-CHLORONAPHTHALENE	JC14857-17A	100	U	100	JC14857-18A	81	U	81		Both ND
3,3'-DICHLOROBENZIDINE	JC14857-17A	100	U	100	JC14857-18A	81	U	81		Both ND
1-1'-BIPHENYL	JC14857-17A	100	U	100	JC14857-18A	81	U	81		Both ND
2-METHYLPHENOL	JC14857-17A	100	U	100	JC14857-18A	81	U	81		Both ND
2-CHLOROPHENOL	JC14857-17A	100	U	100	JC14857-18A	81	U	81		Both ND
1,2,4,5-TETRACHLOROBENZENE	JC14857-17A	250	U	250	JC14857-18A	200	U	200		Both ND
2,4,5-TRICHLOROPHENOL	JC14857-17A	250	U	250	JC14857-18A	200	U	200		Both ND
ACETOPHENONE	JC14857-17A	250	U	250	JC14857-18A	200	U	200		Both ND
NITROBENZENE	JC14857-17A	100	U	100	JC14857-18A	81	U	81		Both ND
3-NITROANILINE	JC14857-17A	250	U	250	JC14857-18A	200	U	200		Both ND

Client Name: PPG Industries	**Project Number:** 60314351.GA.DE.PDI.P3
Site Location: Narula/Smith Site 135 PDI Soil Sampling, Jersey City, NJ	**Project Manager:** Scott Mikaelian
Laboratory: Accutest, Dayton, NJ	**Type of Validation:** Limited
Laboratory Job No: JC14857A	**Date Checked:** 3/22/2016
Validator: Sharon McKechnie	**Peer:** Dion Lewis and Dawn Brule

ITEM	YES	NO	N/A	COMMENTS
Sample results included.	x			
Reporting Limits met project requirements.	x			
Field I.D. included.	x			
Laboratory I.D. included.	x			
Did data package sample IDs match sample IDs on COC?		X		All IDs 135-BB35AR-xxx were missing the "R" in data packages
Did electronic data deliverable (EDD) sample IDs match COC sample IDs?		X		See above
Did data package sample IDs match electronic data deliverable (EDD) sample IDs?		X		See above. EDD correct, COC and data pkgs incorrect
Sample matrix included.	x			
Sample receipt temperature 2-6ºC?	x			
Signed COCs included.	x			
Date of sample collection included.	x			
Date of sample extraction included.	x			
Date of analysis included.	x			
Holding time to analysis met criteria. Aqueous – 7 days from collection to prep, 40 days to analysis. Soils – 14 days from collection to prep, 40 days to analysis	x			
Method reference included.	x			
Laboratory Case Narrative included.	x			
Definitions: MDL – Method Detection Limit; %R – Percent Recovery; RL – Reporting Limit; RPD – Relative Percent Difference; RSD – Relative Standard Deviation :Corr – Correlation Coefficient.				
Comments				

ITEM	YES	NO	N/A	COMMENTS
Method Blank and Field Blanks Included in Lab Package?	x			
1. Method blank analyzed with each preparation batch. 2. Absolute value should not exceed RL.	x x			1. Yes 2. Yes
Surrogate data included.	x			
1. Is %R criteria (laboratory criteria) met?	x			
Matrix Spike/Matrix Spike Duplicate Data Included in Lab Package?	x			Batch QC. QC not evaluated.
1. %R and RPD criteria (laboratory criteria) met. 2. Was the spike concentration at the same concentration as the LCS? 3. Was a sample spiked at the frequency of 1 per20 samples?			x x x	Batch QC. QC not evaluated.
Was a Laboratory control Sample (LCS) Included in Lab Package?	x			
1. %R criteria met. (laboratory criteria) 2. Was an LCS analyzed at the frequency of 1/batch or 20 samples?	x x			1. Yes 2. Yes
Field Duplicate data Included in Lab Package?	x			
1. %RPD criteria (Reg 2 criteria) met. (≤ 35%)	x			Both samples ND for PCBs
Percent Solids data included in Lab Package?	x			
1. % Solids criteria (Reg 2 criteria) met. (≥ 50%)		X		See nonconformance table
Dual Column data included in Lab Package?	x			
1. %D criteria (Reg 2 criteria) met. (<25%)	x			All sample results ND

Field Duplicate Results

Both FD samples ND for PCBs.

Percent Solids (Covers all parameters in this SDG)

Sample ID	Percent Solids (%)	Status
135-CC31A-10.0-10.5	66.1	ok @50%
135-CC31A-12.0-12.5	73.8	ok @50%
135-CC31A-14.0-14.5	48.3	<50%
135-CC31A-16.0-16.5	76	ok @50%
135-CC31A-16.5-17.0	29.6	<50%
135-CC31A-2.0-2.5	82.3	ok @50%
135-CC31A-4.0-4.5	81.4	ok @50%
135-CC31A-6.0-6.5	68.4	ok @50%
135-CC31A-8.0-8.5	75.5	ok @50%
135-BB35AR-1.0-1.5	89.5	ok @50%
135-BB35AR-11.0-11.5	83.4	ok @50%
135-BB35AR-13.0-13.5	79.9	ok @50%
135-BB35AR-14.0-14.5	85.3	ok @50%
135-BB35AR-15.0-15.5	42.8	<50%
135-BB35AR-3.0-3.5	76.7	ok @50%
135-BB35AR-5.0-5.5	72.1	ok @50%
135-BB35AR-7.0-7.5	65.8	ok @50%
135-BB35AR-7.0-7.5X	78.2	ok @50%
135-BB35AR-9.0-9.5	84.3	ok @50%
135-BB36A-1.5-2.0	86.2	ok @50%
135-BB36A-11.5-12.0	85.2	ok @50%
135-BB36A-13.5-14.0	80.9	ok @50%
135-BB36A-14.0-14.5	40.2	<50%
135-BB36A-3.5-4.0	85	ok @50%
135-BB36A-3.5-4.0	85	ok @50%

Sample ID	Percent Solids (%)	Status
135-BB36A-5.5-6.0	87.7	ok @50%
135-BB36A-7.5-8.0	85.5	ok @50%
135-BB36A-9.5-10.0	85.5	ok @50%
135-CC28A-10.0-10.5	50.6	ok @50%
135-CC28A-10.0-10.5X	60.9	ok @50%
135-CC28A-12.0-12.5	70.2	ok @50%
135-CC28A-14.0-14.5	75.9	ok @50%
135-CC28A-16.0-16.5	54.5	ok @50%
135-CC28A-18.0-18.5	57.5	ok @50%
135-CC28A-18.5-19.0	66.7	ok @50%
135-CC28A-19.0-19.5	34.4	<50%
135-CC31A-10.0-10.5	66.1	ok @50%
135-CC31A-12.0-12.5	73.8	ok @50%
135-CC31A-14.0-14.5	48.3	<50%
135-CC31A-16.0-16.5	76	ok @50%
135-CC31A-16.5-17.0	29.6	<50%
135-CC31A-2.0-2.5	82.3	ok @50%
135-CC31A-4.0-4.5	81.4	ok @50%
135-CC31A-6.0-6.5	68.4	ok @50%
135-CC31A-8.0-8.5	75.5	ok @50%

Nondetects Exceeding Criteria (Covers all parameters in this SDG)

Sample ID	Lab ID	Dilution Factor	Method	Analyte	result	detect flag	unit	DIGWSSL_ action_level
135-BB35AR-15.0-15.5	JC14857-14A	1	SW8270	2,4-DINITROPHENOL	340	N	ug/kg	300
135-BB36A-1.5-2.0	JC14857-20A	4	SW8270	2,4-DINITROPHENOL	660	N	ug/kg	300
135-BB36A-1.5-2.0	JC14857-20A	4	SW8270	PENTACHLOROPHENOL	370	N	ug/kg	300
135-BB36A-14.0-14.5	JC14857-23A	1	SW8270	2,4-DINITROPHENOL	360	N	ug/kg	300
135-CC28A-19.0-19.5	JC14857-35A	1	SW8270	2,4-DINITROPHENOL	840	N	ug/kg	300
135-CC28A-19.0-19.5	JC14857-35A	1	SW8270	4,6-DINITRO-2-METHYLPHENOL	370	N	ug/kg	300
135-CC28A-19.0-19.5	JC14857-35A	1	SW8270	PENTACHLOROPHENOL	470	N	ug/kg	300
135-CC31A-16.5-17.0	JC14857-5A	1	SW8270	2,4-DINITROPHENOL	490	N	ug/kg	300
135-CC31A-6.0-6.5	JC14857-8A	1	SW8260	1,1,2,2-TETRACHLOROETHANE	16	N	ug/kg	7
135-CC31A-6.0-6.5	JC14857-8A	1	SW8260	1,1-DICHLOROETHYLENE	55	N	ug/kg	8
135-CC31A-6.0-6.5	JC14857-8A	1	SW8260	1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	50	N	ug/kg	5
135-CC31A-6.0-6.5	JC14857-8A	1	SW8260	1,2-DIBROMOETHANE(EDB)	12	N	ug/kg	5
135-CC31A-6.0-6.5	JC14857-8A	1	SW8260	1,2-DICHLOROETHANE	12	N	ug/kg	5
135-CC31A-6.0-6.5	JC14857-8A	1	SW8260	1,2-DICHLOROPROPANE	22	N	ug/kg	5
135-CC31A-6.0-6.5	JC14857-8A	1	SW8260	BENZENE	12	N	ug/kg	5
135-CC31A-6.0-6.5	JC14857-8A	1	SW8260	BROMODICHLOROMETHANE	14	N	ug/kg	5
135-CC31A-6.0-6.5	JC14857-8A	1	SW8260	CARBON TETRACHLORIDE	21	N	ug/kg	5
135-CC31A-6.0-6.5	JC14857-8A	1	SW8260	CHLORODIBROMOMETHANE	19	N	ug/kg	5
135-CC31A-6.0-6.5	JC14857-8A	1	SW8260	CIS-1,3-DICHLOROPROPENE	11	N	ug/kg	5
135-CC31A-6.0-6.5	JC14857-8A	1	SW8260	DICHLOROMETHANE	90	N	ug/kg	10
135-CC31A-6.0-6.5	JC14857-8A	1	SW8260	TETRACHLOROETHENE	28	N	ug/kg	5
135-CC31A-6.0-6.5	JC14857-8A	1	SW8260	TRANS-1,3-DICHLOROPROPENE	16	N	ug/kg	5
135-CC31A-6.0-6.5	JC14857-8A	1	SW8260	TRICHLOROETHYLENE	14	N	ug/kg	10
135-CC31A-6.0-6.5	JC14857-8A	1	SW8260	VINYL CHLORIDE	18	N	ug/kg	5
135-CC31A-8.0-8.5	JC14857-9A	1	SW8260	1,1,2,2-TETRACHLOROETHANE	18	N	ug/kg	7

Sample ID	Lab ID	Dilution Factor	Method	Analyte	result	detect flag	unit	DIGWSSL_ action_level
135-CC31A-8.0-8.5	JC14857-9A	1	SW8260	1,1-DICHLOROETHYLENE	61	N	ug/kg	8
135-CC31A-8.0-8.5	JC14857-9A	1	SW8260	1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	56	N	ug/kg	5
135-CC31A-8.0-8.5	JC14857-9A	1	SW8260	1,2-DIBROMOETHANE(EDB)	14	N	ug/kg	5
135-CC31A-8.0-8.5	JC14857-9A	1	SW8260	1,2-DICHLOROETHANE	14	N	ug/kg	5
135-CC31A-8.0-8.5	JC14857-9A	1	SW8260	1,2-DICHLOROPROPANE	25	N	ug/kg	5
135-CC31A-8.0-8.5	JC14857-9A	1	SW8260	BENZENE	14	N	ug/kg	5
135-CC31A-8.0-8.5	JC14857-9A	1	SW8260	BROMODICHLOROMETHANE	16	N	ug/kg	5
135-CC31A-8.0-8.5	JC14857-9A	1	SW8260	CARBON TETRACHLORIDE	24	N	ug/kg	5
135-CC31A-8.0-8.5	JC14857-9A	1	SW8260	CHLORODIBROMOMETHANE	21	N	ug/kg	5
135-CC31A-8.0-8.5	JC14857-9A	1	SW8260	CIS-1,3-DICHLOROPROPENE	12	N	ug/kg	5
135-CC31A-8.0-8.5	JC14857-9A	1	SW8260	DICHLOROMETHANE	100	N	ug/kg	10
135-CC31A-8.0-8.5	JC14857-9A	1	SW8260	TETRACHLOROETHENE	31	N	ug/kg	5
135-CC31A-8.0-8.5	JC14857-9A	1	SW8260	TRANS-1,3-DICHLOROPROPENE	18	N	ug/kg	5
135-CC31A-8.0-8.5	JC14857-9A	1	SW8260	TRICHLOROETHYLENE	15	N	ug/kg	10
135-CC31A-8.0-8.5	JC14857-9A	1	SW8260	VINYL CHLORIDE	20	N	ug/kg	5

Sample ID	Lab ID	Dilution Factor	Method	Analyte	result	detect_ flag	unit	RDCSRS_ action_ level
135-CC31A-6.0-6.5	JC14857-8A	1	SW8260	1,2-DIBROMOETHANE(EDB)	12	N	ug/kg	8
135-CC31A-8.0-8.5	JC14857-9A	1	SW8260	1,2-DIBROMOETHANE(EDB)	14	N	ug/kg	8

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Data Validation Report

Project:	PPG-Carteret PDI	
Laboratory:	SGS/Accutest, Dayton, NJ	
Laboratory Job No.:	JC22160 and JC22160R	
Analysis/Method:	Hexavalent Chromium SW846 3060A/7196	
Validation Level:	Full	
Site Location/Address:	70 Carteret Ave, Jersey City, NJ	
AECOM Project No:	60504380.GA.DE.PDI.CAR	
Prepared by:	Kristin Rutherford/AECOM	Completed on: 08/03/2016
Reviewed by:	Mary Kozik /AECOM	File Name: JC22160_R_0803016_DVReport-F

Introduction

The data were reviewed in accordance with the FSP-QAPP and the following NJDEP validation Standard Operating Procedure (SOP):

- NJDEP Office of Data Quality SOP 5.A.10, Rev 3 (September 2009), SOP for Analytical Data Validation of Hexavalent Chromium - for USEPA SW-846 Method 3060A, USEPA SW-846 Method 7196A and USEPA SW-846 Method 7199.

The results of quality control data analyzed with site samples were used to assess the overall reliability of the data. The following qualifiers were used to identify data quality issues:

U: Indicates the analyte was not detected in the sample above the sample reporting limit.

J: Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

UJ: Indicates the analyte was not detected above the reporting limit and the reporting limit was approximate.

UB: The analyte concentration is less than or equal to three (3) times the concentration in the associated method/prep blank. The presence of the analyte in the sample is negated (UB) due to laboratory contamination.

JB: The analyte concentration is greater than three (3) times, but less than or equal to ten (10) times the concentration in the associated method/prep blank. The presence of that analyte in the sample is considered "real". The concentration is quantitatively qualified (JB) due to method blank contamination.

R: The sample result was rejected due to serious deficiencies; the presence or absence of the analyte could not be confirmed.

RA: The sample result was rejected but is still considered usable.

Sample Information

The samples listed below were collected by AECOM on June 14, 2016 as part of the PPG-Carteret PDI sampling at 70 Carteret Ave, Jersey City, New Jersey. Only the samples and parameters listed below were validated.

Field ID	Laboratory ID	Matrix	Fraction
CAR-FB20160614 (Equipment Blank)	JC22160-1	Aqueous	Hexavalent Chromium
CAR-PDI-EE20A-0.3-0.8	JC22160-2, -2R	Soil	Hexavalent Chromium
CAR-PDI-EE20A-10.0-10.5	JC22160-3, -3R	Soil	Hexavalent Chromium
CAR-PDI-EE20A-15.0-15.5	JC22160-4, -4R	Soil	Hexavalent Chromium
CAR-PDI-EE20A-15.5-16.0	JC22160-5, -5R	Soil	Hexavalent Chromium
CAR-PDI-EE20A-14.0-14.5	JC22160-6, -6R	Soil	Hexavalent Chromium
CAR-PDI-EE20A-12.0-12.5	JC22160-7, -7R	Soil	Hexavalent Chromium
CAR-PDI-EE20A-2.0-2.5	JC22160-8, -8R	Soil	Hexavalent Chromium
CAR-PDI-EE20A-4.0-4.5	JC22160-9, -9R	Soil	Hexavalent Chromium
CAR-PDI-EE20A-6.0-6.5	JC22160-10, -10R	Soil	Hexavalent Chromium
CAR-PDI-EE20A-8.0-8.5	JC22160-11, -11R	Soil	Hexavalent Chromium
CAR-PDI-GG23A-0.0-0.5	JC22160-12, -12R	Soil	Hexavalent Chromium
CAR-PDI-GG23A-10.0-10.5	JC22160-13, -13R	Soil	Hexavalent Chromium
CAR-PDI-GG23A-10.5-11.0	JC22160-14, -14R	Soil	Hexavalent Chromium
CAR-PDI-GG23A-2.0-2.5	JC22160-15, -15R	Soil	Hexavalent Chromium
CAR-PDI-GG23A-4.0-4.5	JC22160-16, -16R	Soil	Hexavalent Chromium
CAR-PDI-GG23A-6.0-6.5	JC22160-17, -17R	Soil	Hexavalent Chromium
CAR-PDI-GG23A-8.0-8.5X (Field Duplicate of CAR-PDI-GG23A-8.0-8.5)	JC22160-18, -18R	Soil	Hexavalent Chromium
CAR-PDI-GG23A-8.0-8.5	JC22160-19, -19R	Soil	Hexavalent Chromium

The samples were collected following the procedures detailed in the Work Order for Garfield Avenue Remedial Action (GARA) at 70 Carteret Ave, Jersey City, NJ and the Field Sampling Plan/Quality Assurance Project Plan for Non-Residential and Residential Chromium Sites Hudson County, New Jersey (December 2011).

General Comments

The data package was complete. Quality control (QC) issues identified during validation are discussed below. Refer to the Target Analyte Summary Hit(s) in Attachment A for a listing of all detected results, qualified results, and associated qualifications, where applicable. The nonconformances for each section discussed below are presented in Attachment B.

The sample ID listed on the COC [CAR-PDI-GG23A-8.0-8.0X] for laboratory sample JC22160-18 was changed by AECOM to CAR-PDI-GG23A-8.0-8.5X after the sample was received at the laboratory. The laboratory correctly identified the sample as CAR-PDI-GG23A-8.0-8.5X in the data package.

MS Results

MS sample CAR-PDI-EE20A-0.3-0.8

Method 7196A

For the MS on sample CAR-PDI-EE20A-0.3-0.8, the soluble and insoluble MS recoveries from the initial batch were 62.1% and 108.6%, respectively. The soluble MS did not meet quality control (QC) criteria of 75-125%. The post digestion spike (PDS) recovery was 85.0%, which met the PDS criteria of 85-115%.

Based on the low soluble MS recovery less than 75%, samples were reanalyzed using Method 7196. The soluble and insoluble MS results from the reanalysis were 58.6% and 82.8%, respectively. Again, the soluble MS did not meet QC criteria of 75-125%. The PDS result was 87.0%, which was within the QC criteria of 85-115%.

Since the matrix spikes failed to meet QC criteria, additional parameters were analyzed to determine if possible matrix interferences could be the cause for the poor matrix spike recoveries. All samples included in this sample data group (SDG) were tested for pH and oxidation reduction potential (ORP), and plotted on an Eh/pH phase diagram. From this chart, the source sample for the matrix spike analysis of sample CAR-PDI-EE20A-0.3-0.8 was plotted below the phase change line, indicating reducing potential with the sample matrix, which suggests the sample matrix environment is incapable of supporting the hexavalent chromium analyte. To confirm the oxidizing/reducing potential within the sample matrix, additional ancillary parameters ferrous iron, sulfide screen, and total organic carbon (TOC) were analyzed for on this matrix spike source sample. The sulfide screen was reported as nondetect, indicating no reducing agents within the sample matrix; however, the ferrous iron (0.53%) and the TOC results (30,700 mg/kg) were positive, confirming potential reducing agents within the sample matrix.

Since the MS recoveries from both the initial and reanalysis did not meet the MS QC requirements, but were greater than 50%, the highest detected hexavalent chromium result or the nondetect hexavalent chromium result with the lowest reporting limit (RL) was reported for each soil sample. The reported hexavalent chromium results in all the soil samples in this SDG were qualified as estimated (J/UJ) due to the poor MS recoveries.

Laboratory Duplicate Precision

Sample CAR-PDI-EE20A-0.3-0.8 was selected by the laboratory to demonstrate laboratory precision capabilities.

The results for the laboratory duplicate precision analysis met criteria in the initial analysis, but exceeded the QC criteria of ±RL for sample results less than or equal to 4 times the RL in the re-analysis batch. Therefore, hexavalent chromium results for samples CAR-PDI-EE20A-6.0-6.5, CAR-PDI-GG23A-10.0-10.5, and CAR-PDI-EE20A-2.0-2.5, reported from the re-analysis, were qualified as estimated (J/UJ), with the potential for bias in an unknown direction.

Field Duplicate Precision

Sample CAR-PDI-GG23A-8.0-8.5X was collected as a field duplicate of sample CAR-PDI-GG23A-8.0-8.5 from this site.

The reported parent sample and field duplicate results (refer to MS section above) were less than 4 times the RL. The absolute difference between the reported field duplicate results was greater than

the absolute difference criteria of less than or equal to the RL; therefore; all reported hexavalent chromium soil results were qualified as estimated (J/UJ).

Percent Solids

The moisture content for samples CAR-PDI-EE20A-15.5-16.0 and CAR-PDI-GG23A-10.5-11.0 in this SDG exceeded the acceptable limit of 50%; therefore, the results were qualified (J) as estimated. Refer to the Target Analyte Summary Hit List(s) in Attachment A and the nonconformance tables in Attachment B for the samples with percent moisture content that exceeded the QC limit.

Sample Results

Reported results (flagged B by the laboratory) that were less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL) are approximate values and have been qualified as estimated (J).

Data Quality and Usability

In general, these data appear to be valid and may be used for decision-making purposes. No data were rejected. Qualified results, if applicable, are presented in Attachments A and B.

The hexavalent chromium soil results in this SDG are usable as estimated values with the potential for low bias due to low soluble MS recovery, and since the MS sample matrix appears to be reducing based on the Eh-pH plot and the presence of TOC and ferrous iron.

Due to poor laboratory duplicate precision in the re-analysis batch, the hexavalent chromium result for samples CAR-PDI-EE20A-6.0-6.5, CAR-PDI-GG23A-10.0-10.5, and CAR-PDI-EE20A-2.0-2.5 are usable as estimated values with the potential for bias in an unknown direction.

Due to poor field duplicate precision, the hexavalent chromium result for all soil samples are usable as estimated values with the potential for bias in an unknown direction.

Sample results reported between the MDL and RL, and/or qualified due to high percent moisture content are usable as estimated values with an unknown directional bias.

ATTACHMENTS

Attachment A: Target Analyte Summary Hitlist(s)

Attachment B: Data Validation Report Form

Attachment A

Target Analyte Summary Hitlist(s)

Soil Target Analyte Summary Hit List (Hexavalent Chromium)

Site Name PPG-Carteret PDI
Sampling Date June 14, 2016
Lab Name/ID SGS/Accutest, Dayton, NJ
SDG No JC22160 and JC22160R
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID CAR-FB20160614

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
CAR-PDI-EE20A-0.3-0.8	JC22160-2	CHROMIUM (HEXAVALENT)	U	5.2	5.2	0.46	Qualify	1,3
CAR-PDI-EE20A-10.0-10.5	JC22160-3	CHROMIUM (HEXAVALENT)	U	U	U	0.49	Qualify	1,3
CAR-PDI-EE20A-12.0-12.5	JC22160-7	CHROMIUM (HEXAVALENT)	U	0.39B	0.39	0.50	Qualify	1,3,5
CAR-PDI-EE20A-14.0-14.5	JC22160-6	CHROMIUM (HEXAVALENT)	U	U	U	0.49	Qualify	1,3
CAR-PDI-EE20A-15.0-15.5	JC22160-4	CHROMIUM (HEXAVALENT)	U	0.88	0.88	0.77	Qualify	1,3
CAR-PDI-EE20A-15.5-16.0	JC22160-5	CHROMIUM (HEXAVALENT)	U	5.3	5.3	0.92	Qualify	1,3,4
CAR-PDI-EE20A-2.0-2.5	JC22160-8R	CHROMIUM (HEXAVALENT)	U	7.6	7.6	0.55	Qualify	1,2,3
CAR-PDI-EE20A-4.0-4.5	JC22160-9	CHROMIUM (HEXAVALENT)	U	0.49	0.49	0.47	Qualify	1,3
CAR-PDI-EE20A-6.0-6.5	JC22160-10R	CHROMIUM (HEXAVALENT)	U	0.47B	0.47	0.65	Qualify	1,2,3,5
CAR-PDI-EE20A-8.0-8.5	JC22160-11	CHROMIUM (HEXAVALENT)	U	U	U	0.78	Qualify	1,3
CAR-PDI-GG23A-0.0-0.5	JC22160-12	CHROMIUM (HEXAVALENT)	U	1.2	1.2	0.42	Qualify	1,3
CAR-PDI-GG23A-10.0-10.5	JC22160-13R	CHROMIUM (HEXAVALENT)	U	0.84	0.84	0.49	Qualify	1,2,3
CAR-PDI-GG23A-10.5-11.0	JC22160-14	CHROMIUM (HEXAVALENT)	U	0.88B	0.88	1.0	Qualify	1,3,4,5
CAR-PDI-GG23A-2.0-2.5	JC22160-15	CHROMIUM (HEXAVALENT)	U	U	U	0.57	Qualify	1,3
CAR-PDI-GG23A-4.0-4.5	JC22160-16	CHROMIUM (HEXAVALENT)	U	1.0	1.0	0.52	Qualify	1,3
CAR-PDI-GG23A-6.0-6.5	JC22160-17	CHROMIUM (HEXAVALENT)	U	U	U	0.49	Qualify	1,3
CAR-PDI-GG23A-8.0-8.5	JC22160-19	CHROMIUM (HEXAVALENT)	U	1.0	1.0	0.47	Qualify	1,3
CAR-PDI-GG23A-8.0-8.5X	JC22160-18	CHROMIUM (HEXAVALENT)	U	U	U	0.49	Qualify	1,3

Note: A “U” under Method Blank column indicates a nondetect result.
A “U” under the Laboratory Sample Result and Validation Sample Result columns indicates a nondetect result at the RL.

NJDEP Laboratory Footnote

1. The sample result was qualified because the matrix spike recoveries were less than 75 %, but greater than 50%.

2. The reported value was qualified because the laboratory duplicate precision criterion of ± RL if either or both results are <4xRL was exceeded.

3. The reported value was qualified because the field duplicate precision criterion of ± RL if either or both results are <4xRL was exceeded.

4. The reported values were estimated because the sample moisture content was greater than 50 percent.

5. The reported result was greater than the MDL but less than the RL and therefore was estimated.

Attachment B

Data Validation Report Form

Client Name: PPG Industries	**Project Number:** 60504380.GA.DE.PDI.CAR
Site Location: PPG-Carteret PDI, Jersey City, NJ	**Project Manager:** Aimee Ruiter
Laboratory: SGS/Accutest, Dayton, NJ	**Type of Validation:** Full
Laboratory Job No: JC22160 and JC22160R	**Date Checked:** 08/03/2016
Validator: Kristin Rutherford	**Peer:** Mary Kozik

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X			
Field I.D. included?	X			
Laboratory I.D. included?	X			
Did data package sample IDs match sample IDs on COC?		X		Note: Sample ID on COC [CAR-PDI-GG23A-8.0-8.0X] changed to CAR-PDI-GG23A-8.0-8.5X after samples were rec'd by lab. Lab correctly identified the sample as CAR-PDI-GG23A-8.0-8.5X in data package. Correct in JC22160R.
Did electronic data deliverable (EDD) sample IDs match COC sample IDs?		X		see above
Did data package sample IDs match electronic data deliverable (EDD) sample IDs?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6ºC?	X			5.2º C
Signed COCs included?	X			Note: COC page 2 of 2 not signed as relinquished but page 1 of 2 was signed.
Date of sample collection included?	X			
Date of sample digestion included?	X			
Holding time to digestion met criteria? (Soils -30 days from collection to digestion.)	X			
Date of analysis included?	X			
Holding time to analysis met criteria? (Soils -168 hours from digestion to analysis; Aqueous - 24 hours from collection to analysis.	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			
Definitions: MDL - Method Detection Limit; %R - Percent Recovery; RL - Reporting Limit; RPD - Relative Percent Difference; RSD - Relative Standard Deviation :Corr - Correlation Coefficient.				

ITEM	YES	NO	N/A	COMMENTS
Initial calibration documentation included in lab package?	X			
1) Blank plus 4 standards (7196A) or blank plus 3 standards (7199)	X			
2) Correlation coefficient of >0.995 (7196A) or >0.999 (7199)	X			
3) Calibrate daily or each time instrument is set up.	X			
Calibration Check Standard (CCS) for 7196A and Quality Control Sample (QCS) for 7199 Included in Lab Package?	X			
1) %R criteria met? (90 - 110%)	X			
2) Correct frequency of one per every 10 samples	X			
3) CCS and QCS from independent source and at mid- level of calibration curve	X			
Calibration Blanks	X			
1) Analyzed prior to initial calibration standards and after each CCS/QCS?	X			
2) Absolute value should not exceed MDL.	X			
Method Blank, Field Blanks and/or Equipment Blanks Included in Lab Package?	X			CAR-FB20160614
1) Method blank analyzed with each preparation batch?	X			
2) Absolute value should not exceed MDL.	X			
Eh and pH Data	X			
1) Eh and pH data was included and plotted for all samples?	X			
Soluble Matrix Spike Data Included in Lab Package?	X			JC22160-2 and JC22160-2R
1) Soluble Matrix %R criteria met? (75-125%R).		X		See nonconformance tables. Qualify all soils (J/UJ) due to low soluble MS %R.
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?	X			Spiked at 46.2 and 46.6 mg/kg.
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Insoluble Matrix Spike Data Included in Lab Package?	X			
1) Insoluble Matrix %R criteria met? (75-125%R).	X			
2) Was the spike concentration around 400 to 800 mg/Kg?		X		Spiked at 966 and 1080 mg/kg. No impact on data.
Post Digestion Spike	X			
1) Post Digestion Spike %R criteria met? (85-115%R).	X			

ITEM	YES	NO	N/A	COMMENTS
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?	X			
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Sample Duplicate Data Included in Lab Package?	X			JC22160-2 and JC22160-2R
1) RPD criteria met? (RPD < 20%) if both results are ≥4x RL or control limit of± RL if both results are <4xRL.		X		See nonconformance tables. Criteria met for initial analysis; %RPD >20% for re-analysis. Qualify (J) all soils reported from re-analysis.
2) Was a sample duplicate analyzed at the frequency of 1 per batch or 20 samples?	X			
Was a Laboratory Control Sample (LCS) Included in Lab Package?	X			
1) %R criteria met? (80-120%R).	X			
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples?	X			
Were any Field Duplicate samples submitted with this SDG?	X			CAR-PDI-GG23A-8.0-8.5 and CAR-PDI-GG23A-8.0-8.5X
1) RPD criteria met? (RPD < 20%) if both results are ≥4x RL or control limit of± RL if both results are <4xRL.		X		See nonconformance table. Reported results: one ND, the other <4X RL. Abs Diff >RL; therefore, qualify all soils (J/UJ).
Were all sample quantitation and reporting requirements met?	X			
1) Were all solid samples reported with percent solids > 50%?		X		See nonconformance table.
2) Were any samples analyzed or reported with dilutions?		X		No dilutions
Miscellaneous Items	X			
1) For soils by 7196A, was the pH within a range of 7.0-8.0?	X			
2) For soils by 7199, was the pH within a range of 9.0-9.5?			X	
3) For aqueous by 7196A, was the pH with a range of 1.5-2.5?	X			
4) For soils (3060A), was the digestion temperature 90-95C for at least 60 minutes?	X			
5) For 7199, was each sample injected twice and was the RPD ≤20?			X	

Matrix Spikes

Sample ID	Lab ID	Analyte	Matrix Spike	% Recovery	Lower Limit	Upper Limit	PDS%	PDS Limits
CAR-PDI-EE20A-0.3-0.8	JC22160-2	CHROMIUM (HEXAVALENT)	Soluble	62.1	75	125	85.0	85-115
CAR-PDI-EE20A-0.3-0.8	JC22160-3	CHROMIUM (HEXAVALENT)	Insoluble	108.6	75	125		
CAR-PDI-EE20A-0.3-0.8	JC22160-2R	CHROMIUM (HEXAVALENT)	Soluble	58.6	75	125	87.0	85-115
CAR-PDI-EE20A-0.3-0.8	JC22160-2R	CHROMIUM (HEXAVALENT)	Insoluble	82.8	75	125		

Lab Duplicates

Sample ID	Lab ID	Analyte	Sample Result	Qual	Duplicate Result	Qual	QL	Units	RPD	Action
CAR-PDI-EE20A-0.3-0.8	JC22160-2	CHROMIUM (HEXAVALENT)	5.2		5.2		0.46	mg/kg	0	None, RPD acceptable
CAR-PDI-EE20A-0.3-0.8	JC22160-2R	CHROMIUM (HEXAVALENT)	2.5		2.0		0.46	mg/kg	22.2	Qualify J all soil samples reported from reanalysis

Field Duplicates

Sample ID	Duplicate ID	Analyte	Sample Result	Qual	Duplicate Result	Qual	QL	Units	Abs Diff
CAR-PDI-GG23A-8.0-8.5	CAR-PDI-GG23A-8.0-8.5X	CHROMIUM (HEXAVALENT)	1.0		0.49	U	0.47	mg/kg	0.51

Percent Solids

Sample ID	Percent Solids (%)	Status
CAR-PDI-EE20A-15.5-16.0	43.7	<50%
CAR-PDI-GG23A-10.5-11.0	40.0	<50%

SDG#: JC22160 Method 7196	x - concentration	y - response
Batch: GN48181		
Cr+6 ICAL 6/28/2016	0	0
Soil	0.01	0.009
(p. 77 of data pkg)	0.05	0.042
	0.1	0.082
	0.3	0.231
	0.5	0.415
	0.8	0.639
	1	0.818

(p. 77 of data pkg)

AECOM Calculated Offset	-0.00069	OK	Reported Offset	-0.00050
AECOM Slope	0.8122	OK	Reported Slope	0.8118
AECOM Calculated r	0.99972	OK	Reported r	0.99972

LCS calculation	**GP98573-B1**	**P. 49, 77**		
Background Absorbance	0			
Total absorbance	0.712			
Total absorbance - background	0.712			
Instrument Concentration	0.878			
Sample weight (mg/kg)	0.0025			
Final Volume (L)	0.1			
Dilution Factor	1			
AECOM Calculated LCS Result (mg/kg)	35.1	OK	Reported Result (mg/Kg)	35.1

%R = Found/True*100	**GP98573-B1**	**P. 49, 77**		
True Value (mg/kg)	40			
AECOM Calculated %R=	87.8	OK	Reported %R=	87.8

MS calculation	**GP98573-S2**	**P. 51, 77**	**JC22160-2**	
Background reading	0			
Total absorbance	0.336			
Total absorbance - background	0.336			
Instrument Concentration	0.4146			
Sample weight (mg/kg)	0.00246			
Final Volume (L)	0.1			
Percent solids	0.872			
Dilution Factor	50			
AECOM Calculated MS Result (mg/kg)=	966	OK	Reported Result (mg/kg)	966

%R = Found/True*100	**GP98573-S2**	**P. 51, 77**	**JC22160-2**	
Spike Amount (mg/kg)	885			
Native sample concentration (mg/kg)	5.2			
AECOM Calculated %R=	108.6	OK	Reported %R=	108.6

Percent Solids	**JC22160-2**	**P. 52**	**CAR-PDI-EE20A-0.3-0.8**	
Empty dish weight	19.71			
Wet weight	27.37			
Dry weight	26.39			
AECOM Calculated %solids=	87.2	OK	Reported %solids=	87.2

Reporting Limit	**JC22160-2**	**P. 12, 52, 77**	**CAR-PDI-EE20A-0.3-0.8**	
Low Standard	0.01			
Initial weight (mg/kg)	0.00252			
Final volume (L)	0.1			
Percent solids	0.872			
Dilution Factor	1			
Reporting Limit	0.46	OK	Reported RL (mg/kg)=	0.46

Sample Calculations	**JC22160-2**	**P. 12, 52, 77**	**CAR-PDI-EE20A-0.3-0.8**	
Background reading	0.006			
Total absorbance	0.098			
Total absorbance - background	0.092			
Instrument Response	0.114			
Sample weight (mg/kg)	0.00252			
Final Volume (L)	0.1			
Percent solids	0.872			
Dilution Factor	1			
AECOM Calculated Result (mg/kg)	5.2	OK	Reported Result (mg/kg)	5.2

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Data Validation Report

Project:	Site 135 South Pit Bottom	
Laboratory:	SGS/Accutest, Dayton, NJ	
Laboratory Job No.:	JC24868 and JC24868R	
Analysis/Method:	Hexavalent Chromium SW846 3060A/7196A	
Validation Level:	Full	
Site Location/Address:	PPG Site 135 - Garfield Avenue, Jersey City, NJ	
AECOM Project No:	60482955.GA.RA.OSS.2016	
Prepared by:	Sharon McKechnie/AECOM	Completed on: 09/07/2016
Reviewed by:	Mary Kozik/AECOM	File Name: JC24868_R_2016_09_07_DVReport-F

Introduction

The data were reviewed in accordance with the FSP-QAPP and the following NJDEP validation Standard Operating Procedure (SOP):

- NJDEP Office of Data Quality SOP 5.A.10, Rev 3 (September 2009), SOP for Analytical Data Validation of Hexavalent Chromium - for USEPA SW-846 Method 3060A, USEPA SW-846 Method 7196A.

The results of quality control data analyzed with site samples were used to assess the overall reliability of the data. The following qualifiers were used to identify data quality issues:

U: Indicates the analyte was not detected in the sample above the sample reporting limit.

J: Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

UJ: Indicates the analyte was not detected above the reporting limit and the reporting limit was approximate.

UB: The analyte concentration is less than or equal to three (3) times the concentration in the associated method/prep blank. The presence of the analyte in the sample is negated (UB) due to laboratory contamination.

JB: The analyte concentration is greater than three (3) times, but less than or equal to ten (10) times the concentration in the associated method/prep blank. The presence of that analyte in the sample is considered "real". The concentration is quantitatively qualified (JB) due to method blank contamination.

R: The sample result was rejected due to serious deficiencies; the presence or absence of the analyte could not be confirmed.

RA: The sample result was rejected but is still considered usable.

Sample Information

The samples listed below were collected by AECOM on July 28, 2016 as part of the Site 135 South Pit Bottom sampling at PPG Site 135 - Garfield Avenue, Jersey City, New Jersey. Only the samples and parameter listed below were validated.

Field ID	Laboratory ID	Matrix	Fraction
135-AA36A-SW-E-3.3-3.8	JC24868-3,3R	Soil	Hexavalent Chromium
135-FB20160728 (Equipment Blank)	JC24868-1	Aqueous	Hexavalent Chromium
135-Z33A-PB-4.6-5.1	JC24868-2,2R	Soil	Hexavalent Chromium

The samples were collected following the procedures detailed in the Work Order for Garfield Avenue Remedial Action (GARA) at PPG Site 135 - Garfield Avenue, Jersey City, New Jersey and the Field Sampling Plan/Quality Assurance Project Plan for Non-Residential and Residential Chromium Sites Hudson County, New Jersey (December 2011).

General Comments

The data package was complete. Quality control (QC) issues identified during validation are discussed below. Refer to the Target Analyte Summary Hitlist(s) in Attachment A for a listing of all detected results, qualified results, and associated qualifications, where applicable. The nonconformances for each section discussed below are presented in Attachment B.

MS Results

MS sample 135-AA36A-SW-E-3.3-3.8

For the matrix spike (MS) on sample 135-AA36A-SW-E-3.3-3.8, the soluble and insoluble MS recoveries from the initial batch by Method 7196 were 28.9% and 121%, respectively. The soluble MS recovery failed to meet the quality control (QC) criteria of 75-125%, and was less than 50%. The post digestion spike (PDS) recovery was 92.1%, which met the PDS criteria of 85-115%.

Based on the low soluble MS recovery of less than 50%, the samples were reanalyzed using Method 7196. The soluble and insoluble MS results from the reanalysis were 46.3% and 78.6%, respectively. The soluble MS recovery failed to meet the QC criteria of 75-125%, and was again less than 50%. The PDS recovery was 80%, which did not meet the PDS criteria of 85-115%. After pH adjustment, the PDS recovery was 64.7%.

Since the soluble matrix spikes failed to meet QC criteria, additional parameters were analyzed to determine if matrix interference could be the cause for the poor matrix spike recoveries. All samples included in this sample data group (SDG) were tested for pH and oxidation-reduction potential (ORP), and plotted on an Eh/pH phase diagram. From this chart, the source sample for the matrix spike analysis of sample 135-AA36A-SW-E-3.3-3.8 was plotted below the phase change line, indicating reducing potential with the sample matrix, which suggests the sample matrix environment is incapable of supporting hexavalent chromium. To confirm the oxidizing/reducing potential within the sample matrix, the additional ancillary parameters ferrous iron, sulfide screen, and total organic carbon (TOC) were analyzed for the matrix spike source sample. The sulfide screen was reported as nondetect, indicating no reducing agents within the sample matrix; however, the ferrous iron (0.13%) and the TOC results (95,800 mg/kg) were positive, indicating potential reducing agents within the sample matrix.

Since the soluble MS recoveries from both the initial and reanalysis were less than 50%, but both insoluble MS recoveries met the MS QC criteria, the highest detected hexavalent chromium result

was reported for each soil sample. The reported hexavalent chromium results in all the soil samples in this SDG were qualified as estimated (J) due to the poor MS recoveries.

Laboratory Duplicate Precision

Sample 135-AA36A-SW-E-3.3-3.8 was selected by the laboratory to demonstrate laboratory precision capabilities.

The relative percent difference (RPD) for hexavalent chromium exceeded the QC acceptance criteria for sample results greater than four times the reporting limit (RL) in the initial analysis. In the reanalysis, the sample result was less than four times the RL and the duplicate result was greater than four times the RL. Therefore, the hexavalent chromium results in all soil samples were qualified as estimated (J).

Data Quality and Usability

In general, these data appear to be valid and may be used for decision-making purposes. No data were rejected. Qualified and detected results are presented in Attachments A and B.

The hexavalent chromium soil results in this SDG are usable as estimated values with the potential for low bias due to low MS recoveries, and since the MS sample matrix appears to be reducing based on the Eh-pH plot and the presence of TOC and ferrous iron. The highest detected result between the initial and reanalysis was reported for each soil sample.

All hexavalent chromium results were estimated for laboratory duplicate precision.

ATTACHMENTS

Attachment A: Target Analyte Summary Hitlist(s)

Attachment B: Data Validation Report Form

Attachment A

Target Analyte Summary Hitlist(s)

Soil Target Analyte Summary Hit List (Hexavalent Chromium)

Site Name Site 135 South Pit Bottom
Sampling Date July 28, 2016
Lab Name/ID SGS/Accutest, Dayton, NJ
SDG No JC24868 and JC24868R
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID 135-FB20160728

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-AA36A-SW-E-3.3-3.8	JC24868-3	CHROMIUM (HEXAVALENT)	U	4.5	4.5	0.45	Qualify	1,2
135-Z33A-PB-4.6-5.1	JC24868-2	CHROMIUM (HEXAVALENT)	U	3.1	3.1	0.54	Qualify	1,2

Note: A “U” under Method Blank column indicates a nondetect result.
A “U” under the Laboratory Sample Result and Validation Sample Result columns indicates a nondetect result at the RL.

NJDEP Laboratory Footnote

1. The sample result was qualified because the MS recoveries were outside the MS QC criteria.

2. The sample result was qualified because the laboratory duplicate RPD was outside of the RPD QC criteria.

Attachment B

Data Validation Report Form

Client Name: PPG Industries	**Project Number:** 60482955.GA.RA.OSS.2016
Site Location: Site 135 South Pit Bottom, Jersey City, NJ	**Project Manager:** Scott Mikaelian
Laboratory: SGS/Accutest, Dayton, NJ	**Type of Validation:** Full
Laboratory Job No: JC24868 and JC24868R	**Date Checked:** 09/07/2016
Validator: Sharon McKechnie	**Peer:** Mary Kozik

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X			
Field I.D. included?	X			
Laboratory I.D. included?	X			
Did data package sample IDs match sample IDs on COC?	X			
Did electronic data deliverable (EDD) sample IDs match COC sample IDs?	X			
Did data package sample IDs match electronic data deliverable (EDD) sample IDs?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6ºC?	X			
Signed COCs included?	X			
Date of sample collection included?	X			
Date of sample digestion included?	X			
Holding time to digestion met criteria? (Soils -30 days from collection to digestion.)	X			
Date of analysis included?	X			
Holding time to analysis met criteria? (Soils -168 hours from digestion to analysis; Aqueous - 24 hours from collection to analysis.	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			
Definitions: MDL - Method Detection Limit; %R - Percent Recovery; RL - Reporting Limit; RPD - Relative Percent Difference; RSD - Relative Standard Deviation :Corr - Correlation Coefficient.				

ITEM	YES	NO	N/A	COMMENTS
Initial calibration documentation included in lab package?	X			
1) Blank plus 4 standards (7196A) or blank plus 3 standards (7199)	X			
2) Correlation coefficient of >0.995 (7196A) or >0.999 (7199)	X			
3) Calibrate daily or each time instrument is set up.	X			
Calibration Check Standard (CCS) for 7196A and Quality Control Sample (QCS) for 7199 Included in Lab Package?	X			
1) %R criteria met? (90 - 110%)	X			
2) Correct frequency of one per every 10 samples	X			
3) CCS and QCS from independent source and at mid- level of calibration curve	X			
Calibration Blanks	X			
1) Analyzed prior to initial calibration standards and after each CCS/QCS?	X			
2) Absolute value should not exceed MDL.	X			
Method Blank, Field Blanks and/or Equipment Blanks Included in Lab Package?	X			
1) Method blank analyzed with each preparation batch?	X			
2) Absolute value should not exceed MDL.	X			
Eh and pH Data	X			
1) Eh and pH data was included and plotted for all samples?	X			
Soluble Matrix Spike Data Included in Lab Package?	X			JC24868-3/3R
1) Soluble Matrix %R criteria met? (75-125%R).		X		See table
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?		X		Initial spiked at 45 mg/kg and rerun spiked at 46.9 mg/kg. The data was not affected.
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Insoluble Matrix Spike Data Included in Lab Package?	X			JC24868-3/3R
1) Insoluble Matrix %R criteria met? (75-125%R).	X			See table
2) Was the spike concentration around 400 to 800 mg/Kg?		X		Initial spiked at 930 mg/kg and rerun spiked at 1390 mg/kg. The data was not affected.
Post Digestion Spike	X			
1) Post Digestion Spike %R criteria met? (85-115%R).		X		No qualifications. See Table.
2) Was the spike concentration 40 mg/Kg or twice the	X			

ITEM	YES	NO	N/A	COMMENTS
sample concentration?				
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Sample Duplicate Data Included in Lab Package?	X			JC24868-3/3R
1) RPD criteria met? (RPD < 20%) if both results are ≥4x RL or control limit of± RL if both results are <4xRL.		X		See Table
2) Was a sample duplicate analyzed at the frequency of 1 per batch or 20 samples?	X			
Was a Laboratory Control Sample (LCS) Included in Lab Package?	X			
1) %R criteria met? (80-120%R).	X			
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples?	X			
Were any Field Duplicate samples submitted with this SDG?		X		
1) RPD criteria met? (RPD < 20%) if both results are ≥4x RL or control limit of± RL if both results are <4xRL.			X	
Were all sample quantitation and reporting requirements met?	X			
1) Were all solid samples reported with percent solids > 50%?	X			
2) Were any samples analyzed or reported with dilutions?		X		No dilutions
Miscellaneous Items	X			
1) For soils by 7196A, was the pH within a range of 7.0-8.0?	X			
2) For soils by 7199, was the pH within a range of 9.0-9.5?			X	
3) For aqueous by 7196A, was the pH with a range of 1.5-2.5?	X			
4) For soils (3060A), was the digestion temperature 90-95C for at least 60 minutes?	X			
5) For 7199, was each sample injected twice and was the RPD ≤20?			X	

Matrix Spikes

Sample ID	Lab ID	Analyte	Matrix Spike	% Recovery	Lower Limit	Upper Limit	PDS%/pH Adj PDS	PDS Limits
135-AA36A-SW-E-3.3-3.8	JC24868-3	CHROMIUM (HEXAVALENT)	Soluble	28.9	75	125	92.1	85-115
135-AA36A-SW-E-3.3-3.8	JC24868-3	CHROMIUM (HEXAVALENT)	Insoluble	121	75	125		
135-AA36A-SW-E-3.3-3.8	JC24868-3R	CHROMIUM (HEXAVALENT)	Soluble	46.3	75	125	80/64.7	85-115
135-AA36A-SW-E-3.3-3.8	JC24868-3R	CHROMIUM (HEXAVALENT)	Insoluble	78.6	75	125		

Lab Duplicates

Sample ID	Lab ID	Analyte	Sample Result	Duplicate Result	QL	Units	RPD (%)	Action
135-AA36A-SW-E-3.3-3.8	JC24868-3	CHROMIUM (HEXAVALENT)	4.5	2.4	0.45	mg/kg	60.9	Both results >4X RL, Estimate (J)
135-AA36A-SW-E-3.3-3.8	JC24868-3R	CHROMIUM (HEXAVALENT)	0.91	2.8	0.45	mg/kg	101.9	One result >4XRL, one result <4XRL, Estimate (J)

Percent Solids

Sample ID	Percent Solids (%)	Status
135-AA36A-SW-E-3.3-3.8	88.9	ok @50%
135-Z33A-PB-4.6-5.1	73.6	ok @50%

SDG#: JC24868/ Method 7196	x - concentration	y - response
Batch: GN49726		
Cr+6 ICAL 7/29/16	0	0
Soil	0.01	0.009
(p. 38 of data pkg)	0.05	0.041
	0.1	0.08
	0.3	0.251
	0.5	0.411
	0.8	0.653
	1	0.831

				(p. 38 of data pkg)
AECOM Calculated Offset	-0.0004	OK	Reported Offset	-0.0004
AECOM Slope	0.8258	OK	Reported Slope	0.8258
AECOM Calculated r	0.99993	OK	Reported r	0.99993

LCS calculation	**GP99210-B1**	**P.19,38**		
Background Absorbance	0			
Total absorbance	0.679			
Total absorbance - background	0.679			
Instrument Concentration	0.823			
Sample weight (mg/kg)	0.0025			
Final Volume (L)	0.1			
Dilution Factor	1			
AECOM Calculated LCS Result (mg/Kg)	32.9	OK	Reported Result (mg/Kg)	32.9

%R = Found/True*100	**GP99210-B1**	**P.19,38**		
True Value (mg/kg)	40			
AECOM Calculated %R	82.3	OK	Reported %R	82.3

MS calculation	**GP99210-S1**	**P.21,38**	**JC24868-3**	
Background reading	0.021			
Total absorbance	0.342			
Total absorbance - background	0.321			
Instrument Concentration	0.3892			
Sample weight (mg/kg)	0.0025			
Final Volume (L)	0.1			
Percent solids	0.889			
Dilution Factor	1			
AECOM Calculated MS Result (mg/Kg)	17.5	OK	Reported Result (mg/Kg)	17.5

%R = Found/True*100	**GP99210-S1**	**P.21,38**	**JC24868-3**	
True Value (mg/kg)	45			
Native concentration (mg/Kg)	4.5			
AECOM%R	28.9	OK	Reported %R	28.9

Percent Solids	**JC24868-3**	**P.22**	**135-AA36A-SW-E-3.3-3.8**	
Empty dish weight=	26.16			
Wet weight=	33.38			
Dry weight=	32.58			
AECOM%solids =	88.9	OK	reported %solids=	88.9

Reporting Limit	JC24868-3	P.10,38	135-AA36A-SW-E-3.3-3.8	
Low Standard	0.01			
Initial weight (mg/kg)	0.0025			
Final volume (L)	0.1			
Percent solids	0.889			
Dilution Factor	1			
Reporting Limit	0.45	OK	Reported RL (mg/Kg)=	0.45

Sample Calculations

	JC24868-3	P.10,38	135-AA36A-SW-E-3.3-3.8	
Background reading	0.022			
Total absorbance	0.106			
Total absorbance - background	0.084			
Instrument Response	0.102			
Sample weight (mg/kg)	0.00253			
Final Volume (L)	0.1			
Percent solids	0.889			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	4.5	OK	Reported Result (mg/Kg)	4.5

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Data Validation Report

Project:	PPG-Al Smith Marketing (ASM) Properties –Smith (ASM) PDI	
Laboratory:	SGS/Accutest, Dayton, NJ	
Laboratory Job No.:	JC25857, JC25857R, and JC25857T	
Analysis/Method:	Hexavalent Chromium SW846 3060A/7196	
Validation Level:	Full	
Site Location/Address:	70 Carteret Ave, Jersey City, NJ	
AECOM Project No:	60314351.GA.DE.PDI.P3	
Prepared by:	Sharon McKechnie/AECOM	Completed on: 09/16/2016
Reviewed by:	Mary Kozik/AECOM	File Name: JC25857_R_T 2016_09_16_DVReport-F

Introduction

The data were reviewed in accordance with the FSP-QAPP and the following NJDEP validation Standard Operating Procedure (SOP):

- NJDEP Office of Data Quality SOP 5.A.10, Rev 3 (September 2009), SOP for Analytical Data Validation of Hexavalent Chromium - for USEPA SW-846 Method 3060A, USEPA SW-846 Method 7196A.

The results of quality control data analyzed with site samples were used to assess the overall reliability of the data. The following qualifiers were used to identify data quality issues:

U: Indicates the analyte was not detected in the sample above the sample reporting limit.

J: Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

UJ: Indicates the analyte was not detected above the reporting limit and the reporting limit was approximate.

UB: The analyte concentration is less than or equal to three (3) times the concentration in the associated method/prep blank. The presence of the analyte in the sample is negated (UB) due to laboratory contamination.

JB: The analyte concentration is greater than three (3) times, but less than or equal to ten (10) times the concentration in the associated method/prep blank. The presence of that analyte in the sample is considered "real". The concentration is quantitatively qualified (JB) due to method blank contamination.

R: The sample result was rejected due to serious deficiencies; the presence or absence of the analyte could not be confirmed.

RA: The sample result was rejected but is still considered usable.

Sample Information

The samples listed below were collected by AECOM on August 15, 2016 as part of the PPG-Smith ASM PDI sampling at 70 Carteret Ave, Jersey City, New Jersey. Only the samples and parameter listed below were validated.

Field ID	Laboratory ID	Matrix	Fraction
ASM-FB20160815 (Equipment Blank)	JC25857-1	Aqueous	Hexavalent Chromium
ASM-T49A-1.0-1.5	JC25857-2	Soil	Hexavalent Chromium
ASM-T49A-10.0-10.5	JC25857-3	Soil	Hexavalent Chromium
ASM-T49A-10.5-11.0	JC25857-4	Soil	Hexavalent Chromium
ASM-T49A-11.0-11.5	JC25857-5	Soil	Hexavalent Chromium
ASM-T49A-2.0-2.5	JC25857-6	Soil	Hexavalent Chromium
ASM-T49A-4.0-4.5	JC25857-7	Soil	Hexavalent Chromium
ASM-T49A-6.0-6.5	JC25857-8	Soil	Hexavalent Chromium
ASM-T49A-8.0-8.5	JC25857-9	Soil	Hexavalent Chromium
ASM-U46A-1.0-1.5	JC25857-10	Soil	Hexavalent Chromium
ASM-U46A-10.0-10.5	JC25857-11	Soil	Hexavalent Chromium
ASM-U46A-12.0-12.5	JC25857-12	Soil	Hexavalent Chromium
ASM-U46A-14.0-14.5	JC25857-13	Soil	Hexavalent Chromium
ASM-U46A-16.0-16.5	JC25857-14	Soil	Hexavalent Chromium
ASM-U46A-18.0-18.5	JC25857-15	Soil	Hexavalent Chromium
ASM-U46A-18.5-19.0	JC25857-16	Soil	Hexavalent Chromium
ASM-U46A-19.0-19.5	JC25857-17	Soil	Hexavalent Chromium
ASM-U46A-3.0-3.5	JC25857-18	Soil	Hexavalent Chromium
ASM-U46A-5.0-5.5	JC25857-19	Soil	Hexavalent Chromium
ASM-U46A-6.0-6.5	JC25857-20	Soil	Hexavalent Chromium
ASM-U46A-8.0-8.5	JC25857-21	Soil	Hexavalent Chromium
ASM-U49A-10.0-10.5	JC25857-47,47T	Soil	Hexavalent Chromium
ASM-U49A-10.5-11.0	JC25857-48,48T	Soil	Hexavalent Chromium
ASM-U49A-11.0-11.5	JC25857-49,49T	Soil	Hexavalent Chromium
ASM-U49A-2.0-2.5	JC25857-50,50T	Soil	Hexavalent Chromium
ASM-U49A-4.0-4.5	JC25857-51,51T	Soil	Hexavalent Chromium
ASM-U49A-6.0-6.5	JC25857-52,52T	Soil	Hexavalent Chromium
ASM-U49A-6.0-6.5X (Field Duplicate of ASM-U49A-6.0-6.5)	JC25857-53,53T	Soil	Hexavalent Chromium
ASM-U49A-8.0-8.5	JC25857-54,54T	Soil	Hexavalent Chromium
ASM-V47A-10.0-10.5	JC25857-22,22R	Soil	Hexavalent Chromium
ASM-V47A-12.0-12.5	JC25857-23,23R	Soil	Hexavalent Chromium
ASM-V47A-14.0-14.5	JC25857-24,24R	Soil	Hexavalent Chromium
ASM-V47A-16.0-16.5	JC25857-25,25R	Soil	Hexavalent Chromium
ASM-V47A-17.0-17.5	JC25857-26,26R	Soil	Hexavalent Chromium

Field ID	Laboratory ID	Matrix	Fraction
ASM-V47A-17.5-18.0	JC25857-27,-27R	Soil	Hexavalent Chromium
ASM-W46A-0.5-1.0	JC25857-28,28R	Soil	Hexavalent Chromium
ASM-W46A-10.0-10.5	JC25857-29,29R	Soil	Hexavalent Chromium
ASM-W46A-12.0-12.5	JC25857-30,30R	Soil	Hexavalent Chromium
ASM-W46A-14.0-14.5	JC25857-31,31R	Soil	Hexavalent Chromium
ASM-W46A-16.0-16.5	JC25857-32,32R	Soil	Hexavalent Chromium
ASM-W46A-17.5-18.0	JC25857-33,33R	Soil	Hexavalent Chromium
ASM-W46A-18.0-18.5	JC25857-34,34R	Soil	Hexavalent Chromium
ASM-W46A-2.0-2.5	JC25857-35,35R	Soil	Hexavalent Chromium
ASM-W46A-4.0-4.5	JC25857-36,36R	Soil	Hexavalent Chromium
ASM-W46A-6.0-6.5	JC25857-37,37R	Soil	Hexavalent Chromium
ASM-W46A-8.0-8.5	JC25857-38,38R	Soil	Hexavalent Chromium
ASM-W49A-1.0-1.5	JC25857-39,39R	Soil	Hexavalent Chromium
ASM-W49A-10.0-10.5	JC25857-40,40R	Soil	Hexavalent Chromium
ASM-W49A-10.5-11.0	JC25857-41,41R	Soil	Hexavalent Chromium
ASM-W49A-11.0-11.5	JC25857-46,46T	Soil	Hexavalent Chromium
ASM-W49A-2.0-2.5	JC25857-42,42T	Soil	Hexavalent Chromium
ASM-W49A-4.0-4.5	JC25857-43,43T	Soil	Hexavalent Chromium
ASM-W49A-6.0-6.5	JC25857-44,44T	Soil	Hexavalent Chromium
ASM-W49A-8.0-8.5	JC25857-45,45T	Soil	Hexavalent Chromium

The samples were collected following the procedures detailed in the Work Order for Garfield Avenue Remedial Action (GARA) at 70 Carteret Ave, Jersey City, NJ and the Field Sampling Plan/Quality Assurance Project Plan for Non-Residential and Residential Chromium Sites Hudson County, New Jersey (December 2011).

General Comments

The data package was complete except for the following:

- Due to a laboratory error, sample ASM-V47A-10.0-10.5 (JC25857-22) was used for the initial matrix spike (MS) instead of the client-requested MS sample ASM-W46A-6.0-6.5 (JC25857-37). During validation, the laboratory was asked to analyze an MS from sample ASM-W46A-6.0-6.5 (JC25857-37) and provide TOC, ferrous iron, and a sulfide screen.

Quality control (QC) issues identified during validation are discussed below. Refer to the Target Analyte Summary Hit List(s) in Attachment A for a listing of all detected results, qualified results, and associated qualifications, where applicable. The nonconformances for each section discussed below are presented in Attachment B.

MS Results

Due to a laboratory error, sample ASM-V47A-10.0-10.5 (JC25857-22) was used for the initial matrix spike (MS) instead of the client-requested MS sample ASM-W46A-6.0-6.5 (JC25857-37). Since the laboratory did not provide raw data for verification of the the MS recoveries from ASM-V47A-10.0-10.5 (JC25857-22), this MS will not be applied for QC purposes.

The MS samples were as follows:

- ASM-U46A-1.0-1.5 (JC25857-10) analytical prep batch GP99667;
- ASM-W46A-6.0-6.5 (JC25857-37/37R) initial analysis/reanalysis analytical prep batches GP99712/GP99866; and
- ASM-U49A-8.0-8.5 (JC25857-54/54T) initial analysis/reanalysis analytical prep batches GP99702/GP99896

MS samples are first associated with field samples using matrix similarities, then by analytical preparation batch when no matrix match is possible. The following table summarizes each of the MS samples, the field samples associated with each, and differentiates between those associated by matrix, and those associated by batch.

Spiked Sample	Samples Associated by Matrix	Samples Associated by Batch
JC25857-10: ASM-U46A-1.0-1.5-Fill-F-M sand, coarse gravel, red/brown	JC25857-2, JC25857-3, JC25857-5, JC25857-6, JC25857-7, JC25857-10, JC25857-11, JC25857-12, JC25857-15, JC25857-16, JC25857-18, JC25857-19, JC25857-20, JC25857-21, JC25857-26, JC25857-28, JC25857-30, JC25857-36, JC25857-39, JC25857-42, JC25857-50, JC25857-51	JC25857-17
JC25857-37:ASM-W46A-6.0-6.6-Ash, cinders, fill debris, grey (also spiked JC25857-22: ASM-V47A-10.0-10.5 - Ash, some sand, fill debris, grey)	JC25857-13, JC25857-14, JC25857-22, JC25857-23, JC25857-24, JC25857-25, JC25857-29, JC25857-31, JC25857-32, JC25857-35, JC25857-37, JC25857-38	JC25857-27, JC25857-33, JC25857-34, JC25857-40, JC25857-41
JC25857-54: ASM-U49A-8.0-8.5-Ash, little silt, fine gravel, fill debris, grey	JC25857-4, JC25857-8, JC25857-9, JC25857-44, JC25857-52, JC25857-53, JC25857-54	JC25857-43, JC25857-45, JC25857-46, JC25857-47, JC25857-48, JC25857-49

ASM-W46A-6.0-6.5 (JC25857-37/37R)

The soluble and insoluble MS recoveries from the initial batch were 64.1% and 79.5%, which did not meet QC criteria of 75-125%R. The PDS recovery was 78.9%, which did not meet the PDS criteria of 85-115%. After pH adjustment, the PDS recovery was 92.1%.

Based on the low MS and PDS recoveries, the samples were reanalyzed using Method 7196. The soluble and insoluble MS results from the reanalysis were 38.9% and 86.7%, respectively. The soluble MS recovery did not meet QC criteria of 75-125%R and was less than 50%. The PDS recovery was 79.0%, which did not meet the PDS criteria of 85-115%. After pH adjustment, the PDS recovery was 86.1%.

Since the MS and PDS recoveries failed to meet QC criteria, additional parameters were analyzed to determine if possible matrix interferences could be the cause for the poor matrix spike recoveries. All the samples were tested for pH and oxidation-reduction potential (ORP), and plotted on an Eh/pH phase diagram. From this chart, the source sample for the matrix spike analysis of sample ASM-W46A-6.0-6.5 was plotted below the phase change line, indicating reducing potential within the sample matrix, incapable of supporting hexavalent chromium. Ferrous iron, sulfide screen, and total organic carbon (TOC) were performed on this matrix spike source sample to confirm the oxidizing/reducing potential within the sample matrix. The sulfide screen was reported as nondetect, indicating no reducing agents within the sample matrix; however, the ferrous iron (0.50%) and the TOC results (264,000 mg/Kg) were positive, indicating potential reducing agents within the sample matrix.

Since the MS and PDS recoveries from both the initial and reanalysis did not meet the MS and PDS QC requirements, but at least one MS recovery was greater than 50%, the reported hexavalent chromium results for the associated samples were qualified as estimated (J/UJ) due to the poor MS and PDS recoveries. The highest detected hexavalent chromium result or the nondetect hexavalent chromium result with the lowest RL was reported for each soil sample.

ASM-U49A-8.0-8.5 (JC25857-54/54T)

The soluble and insoluble MS recoveries from the initial batch were 0.3% and 69.9%; which did not meet QC criteria of 75-125%R, and the soluble MS recovery was less than 50%. The PDS recovery was 51.1%, and after pH adjustment was 53.5%, which did not meet the PDS criteria of 85-115%.

Based on the low MS and PDS recoveries, the samples were reanalyzed using Method 7196. The soluble and insoluble MS results from the reanalysis were 23.4% and 78.1%, respectively. The soluble MS recovery did not meet QC criteria of 75-125%R and was less than 50%. The PDS recovery was 70.5% before and after pH adjustment, which did not meet the PDS criteria of 85-115%.

Since the MS and PDS recoveries failed to meet QC criteria, additional parameters were analyzed to determine if possible matrix interferences could be the cause for the poor matrix spike recoveries. All the samples were tested for pH and oxidation-reduction potential (ORP), and plotted on an Eh/pH phase diagram. From this chart, the source sample for the matrix spike analysis of sample ASM-U49A-8.0-8.5 was plotted below the phase change line, indicating reducing potential within the sample matrix, incapable of supporting hexavalent chromium. Ferrous iron, sulfide screen, and total organic carbon (TOC) were performed on this matrix spike source sample to confirm the oxidizing/reducing potential within the sample matrix. The sulfide screen was reported as nondetect, indicating no reducing agents within the sample matrix; however, the ferrous iron (0.65%) and the TOC results (322,000 mg/Kg) were positive, indicating potential reducing agents within the sample matrix.

Since the MS and PDS recoveries from both the initial and reanalysis did not meet the MS and PDS QC requirements, but at least one MS recovery was greater than 50%, the reported hexavalent chromium results for the associated samples were qualified as estimated (J/UJ) due to the poor MS and PDS

recoveries. The highest detected hexavalent chromium result or the nondetect hexavalent chromium result with the lowest RL was reported for each soil sample.

ASM-U46A-1.0-1.5 (JC25857-10)

The soluble and insoluble MS recoveries were 80.4% and 102.4%, respectively. Both MS recoveries met the quality control (QC) criteria of 75-125%R. The post digestion spike (PDS) recovery was 89.7%, which was within the QC criteria of 85-115%. Therefore, no qualification based on MS recovery was applied since the the MS recoveries met MS QC requirements.

Laboratory Duplicate

In the laboratory duplicate analysis of sample ASM-V47A-10.0-10.5 (JC25857-22) in the initial analysis, the original sample result was nondetect and the duplicate result was detected at greater than 4X the RL. Therefore, all hexavalent chromium results in analytical prep batch GP99712 and reported from the initial analysis were qualified as estimated (J/UJ) based on duplicate precision.

In the laboratory duplicate analysis of sample ASM-W46A-6.0-6.5 (JC25857-37R) in the reanalysis, the RPD exceeded the QC criteria for sample results greater than 4X the RL. Therefore, all hexavalent chromium results in analytical prep batch GP99866 and reported from reported from the reanalysis were qualified as estimated (J/UJ) based on duplicate precision.

Refer to the tables in Attachment B for a listing of laboratory duplicate results and associated samples and qualifications as applicable.

Percent Solids

The moisture content for several samples this SDG exceeded the acceptable limit of 50%; therefore, the results were qualified (J) as estimated. Refer to the Target Analyte Summary Hit List(s) in Attachment A and the nonconformance tables in Attachment B for a listing of the samples with percent moisture content that exceeded the percent moisture QC limit.

Sample Results

Samples ASM-W49A-11.0-11.5 (JC25857-46) and ASM-U49A-4.0-4.5 (JC25857-51) had results that significantly differed between the initial analysis and reanalysis, such that one result exceeded the project action limit of 20 mg/kg. The highest detected hexavalent chromium result between the initial analysis and reanalysis was reported for each sample in this SDG.

Reported results (flagged B by the laboratory) that were less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL) are approximate values and have been qualified as estimated (J).

Data Quality and Usability

In general, these data appear to be valid and may be used for decision-making purposes. No data were rejected. The highest detected hexavalent chromium result or the nondetect hexavalent chromium result with the lowest RL was reported for each soil sample. Qualified and detected results are presented in Attachments A and B.

The hexavalent chromium soil results associated with MS sample ASM-U46A-1.0-1.5 (JC25857-10) were accepted without qualification based on MS recovery. Refer to the MS association table in the text above for associated samples.

The remaining hexavalent chromium soil results associated with MS samples ASM-W46A-6.0-6.5 (JC25857-37) and ASM-U49A-8.0-8.5 (JC25857-54) were estimated with the potential for low bias due to low MS and PDS recoveries, and since the MS sample matrices appear to be reducing based on the Eh-pH plot and the presence of TOC and ferrous iron. Refer to the MS association table in the text above for associated samples.

Due to poor laboratory duplicate precision the reported hexavalent chromium results for several samples were estimated with an undefined bias. Refer to the Target Analyte Summary Hit List(s) in Attachment A and the tables in Attachment B for a listing of laboratory duplicate results and associated qualification actions as applicable.

Sample results reported between the MDL and RL, and qualified due to high percent moisture content are usable as estimated values with an unknown directional bias.

ATTACHMENTS

Attachment A: Target Analyte Summary Hitlist(s)

Attachment B: Data Validation Report Form

Attachment A

Target Analyte Summary Hitlist(s)

Soil Target Analyte Summary Hit List (Hexavalent Chromium)

Site Name PPG-Smith ASM PDI
Sampling Date August 15, 2016
Lab Name/ID SGS/Accutest, Dayton, NJ
SDG No JC25857, JC25857R, and JC25857T
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID ASM-FB20160815

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
ASM-T49A-1.0-1.5	JC25857-2	CHROMIUM (HEXAVALENT)	U	5.5	5.5	0.47		
ASM-T49A-10.5-11.0	JC25857-4	CHROMIUM (HEXAVALENT)	U	0.34B	0.34	0.48	Qualify	1,4,5
ASM-T49A-11.0-11.5	JC25857-5	CHROMIUM (HEXAVALENT)	U	1.8	1.8	0.85	Qualify	3
ASM-T49A-2.0-2.5	JC25857-6	CHROMIUM (HEXAVALENT)	U	0.50B	0.50	0.51	Qualify	4
ASM-T49A-4.0-4.5	JC25857-7	CHROMIUM (HEXAVALENT)	U	32.9	32.9	0.54		
ASM-T49A-6.0-6.5	JC25857-8	CHROMIUM (HEXAVALENT)	U	U	U	0.68	Qualify	1,5
ASM-T49A-8.0-8.5	JC25857-9	CHROMIUM (HEXAVALENT)	U	U	U	0.57	Qualify	1,5
ASM-U46A-1.0-1.5	JC25857-10	CHROMIUM (HEXAVALENT)	U	0.52	0.52	0.44		
ASM-U46A-14.0-14.5	JC25857-13	CHROMIUM (HEXAVALENT)	U	0.70	0.70	0.63	Qualify	1,5
ASM-U46A-16.0-16.5	JC25857-14	CHROMIUM (HEXAVALENT)	U	U	U	0.89	Qualify	1,3,5
ASM-U46A-18.0-18.5	JC25857-15	CHROMIUM (HEXAVALENT)	U	0.36B	0.36	0.46	Qualify	4
ASM-U46A-18.5-19.0	JC25857-16	CHROMIUM (HEXAVALENT)	U	1.0	1.0	0.96	Qualify	3
ASM-U46A-19.0-19.5	JC25857-17	CHROMIUM (HEXAVALENT)	U	0.83B	0.83	0.84	Qualify	3,4
ASM-U46A-3.0-3.5	JC25857-18	CHROMIUM (HEXAVALENT)	U	1.5	1.5	0.45		
ASM-U46A-5.0-5.5	JC25857-19	CHROMIUM (HEXAVALENT)	U	1.3	1.3	0.48		
ASM-U46A-6.0-6.5	JC25857-20	CHROMIUM (HEXAVALENT)	U	6.1	6.1	0.53		
ASM-U49A-10.0-10.5	JC25857-47T	CHROMIUM (HEXAVALENT)	U	0.44B	0.44	0.50	Qualify	1,4,5
ASM-U49A-10.5-11.0	JC25857-48	CHROMIUM (HEXAVALENT)	U	U	U	0.50	Qualify	1,5

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
ASM-U49A-11.0-11.5	JC25857-49T	CHROMIUM (HEXAVALENT)	U	5.7	5.7	1.0	Qualify	1,3,5
ASM-U49A-2.0-2.5	JC25857-50	CHROMIUM (HEXAVALENT)	U	8.6	8.6	0.45		
ASM-U49A-4.0-4.5	JC25857-51T	CHROMIUM (HEXAVALENT)	U	21.1	21.1	0.60		
ASM-U49A-6.0-6.5	JC25857-52	CHROMIUM (HEXAVALENT)	U	U	U	0.57	Qualify	1,5
ASM-U49A-6.0-6.5X	JC25857-53	CHROMIUM (HEXAVALENT)	U	U	U	0.56	Qualify	1,5
ASM-U49A-8.0-8.5	JC25857-54	CHROMIUM (HEXAVALENT)	U	0.46B	0.46	0.63	Qualify	1,4,5
ASM-V47A-10.0-10.5	JC25857-22	CHROMIUM (HEXAVALENT)	U	U	U	0.56	Qualify	1,2,5
ASM-V47A-12.0-12.5	JC25857-23R	CHROMIUM (HEXAVALENT)	U	0.38B	0.38	0.53	Qualify	1,2,4,5
ASM-V47A-14.0-14.5	JC25857-24	CHROMIUM (HEXAVALENT)	U	U	U	0.67	Qualify	1,2,5
ASM-V47A-16.0-16.5	JC25857-25	CHROMIUM (HEXAVALENT)	U	U	U	0.70	Qualify	1,2,5
ASM-V47A-17.0-17.5	JC25857-26	CHROMIUM (HEXAVALENT)	U	U	U	0.47	Qualify	2
ASM-V47A-17.5-18.0	JC25857-27	CHROMIUM (HEXAVALENT)	U	U	U	1.1	Qualify	1,2,3,5
ASM-W46A-0.5-1.0	JC25857-28	CHROMIUM (HEXAVALENT)	U	0.65	0.65	0.44	Qualify	2
ASM-W46A-10.0-10.5	JC25857-29	CHROMIUM (HEXAVALENT)	U	1.1	1.1	0.53	Qualify	1,2,5
ASM-W46A-12.0-12.5	JC25857-30	CHROMIUM (HEXAVALENT)	U	U	U	0.47	Qualify	2
ASM-W46A-14.0-14.5	JC25857-31	CHROMIUM (HEXAVALENT)	U	U	U	0.68	Qualify	1,2,5
ASM-W46A-16.0-16.5	JC25857-32R	CHROMIUM (HEXAVALENT)	U	0.52	0.52	0.52	Qualify	1,2,5
ASM-W46A-17.5-18.0	JC25857-33	CHROMIUM (HEXAVALENT)	U	0.75B	0.75	0.85	Qualify	1,2,3,4,5
ASM-W46A-18.0-18.5	JC25857-34R	CHROMIUM (HEXAVALENT)	U	0.76B	0.76	0.79	Qualify	1,2,4,5
ASM-W46A-2.0-2.5	JC25857-35R	CHROMIUM (HEXAVALENT)	U	0.75	0.75	0.47	Qualify	1,2,5
ASM-W46A-4.0-4.5	JC25857-36	CHROMIUM (HEXAVALENT)	U	0.98	0.98	0.46	Qualify	2
ASM-W46A-6.0-6.5	JC25857-37R	CHROMIUM (HEXAVALENT)	U	2.2	2.2	0.50	Qualify	1,2,5
ASM-W46A-8.0-8.5	JC25857-38R	CHROMIUM (HEXAVALENT)	U	0.61B	0.61	0.62	Qualify	1,2,4,5
ASM-W49A-1.0-1.5	JC25857-39R	CHROMIUM (HEXAVALENT)	U	5.2	5.2	0.48	Qualify	2
ASM-W49A-10.0-10.5	JC25857-40R	CHROMIUM (HEXAVALENT)	U	0.83	0.83	0.47	Qualify	1,2,5

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
ASM-W49A-10.5-11.0	JC25857-41	CHROMIUM (HEXAVALENT)	U	U	U	0.48	Qualify	1,2,5
ASM-W49A-11.0-11.5	JC25857-46T	CHROMIUM (HEXAVALENT)	U	26.8	26.8	1.3	Qualify	1,3,5
ASM-W49A-2.0-2.5	JC25857-42	CHROMIUM (HEXAVALENT)	U	2.1	2.1	0.51		
ASM-W49A-4.0-4.5	JC25857-43T	CHROMIUM (HEXAVALENT)	U	1.0	1.0	0.47	Qualify	1,5
ASM-W49A-6.0-6.5	JC25857-44	CHROMIUM (HEXAVALENT)	U	0.45B	0.45	0.49	Qualify	1,4,5
ASM-W49A-8.0-8.5	JC25857-45	CHROMIUM (HEXAVALENT)	U	U	U	0.48	Qualify	1,5

Note: A “U” under Method Blank column indicates a nondetect result.
A “U” under the Laboratory Sample Result and Validation Sample Result columns indicates a nondetect result at the RL.

NJDEP Laboratory Footnote

1. The sample result was estimated because the matrix spike recoveries were less than 75 %, but greater than 50%.
2. The reported value was estimated because the lab duplicate precision criteria were not met.
3. The reported values were estimated because the sample moisture content was less than 50 percent.
4. The reported result was greater than the MDL but less than the RL and therefore was estimated.
5. The sample result was estimated because the PDS recoveries did not meet PDS criteria.

Attachment B

Data Validation Report Form

Client Name: PPG Industries	**Project Number:** 60314351.GA.DE.PDI.P3
Site Location: PPG-Smith ASM PDI, Jersey City, NJ	**Project Manager:** Aimee Ruiter
Laboratory: SGS/Accutest, Dayton, NJ	**Type of Validation:** Full
Laboratory Job No: JC25857, JC25857R, JC25857T	**Date Checked:** 09/16/2016
Validator: Sharon McKechnie	**Peer:** Mary Kozik

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X	X*		*Raw data missing for MS sample JC25857-22. See memo for details.
Reporting Limits met project requirements?	X			
Field I.D. included?	X			
Laboratory I.D. included?	X			
Did data package sample IDs match sample IDs on COC?	X			
Did electronic data deliverable (EDD) sample IDs match COC sample IDs?	X			
Did data package sample IDs match electronic data deliverable (EDD) sample IDs?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6ºC?	X			
Signed COCs included?	X			
Date of sample collection included?	X			
Date of sample digestion included?	X			
Holding time to digestion met criteria? (Soils -30 days from collection to digestion.)	X			
Date of analysis included?	X			
Holding time to analysis met criteria? (Soils -168 hours from digestion to analysis; Aqueous - 24 hours from collection to analysis.	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			
Definitions: MDL - Method Detection Limit; %R - Percent Recovery; RL - Reporting Limit; RPD - Relative Percent Difference; RSD - Relative Standard Deviation :Corr - Correlation Coefficient.				

ITEM	YES	NO	N/A	COMMENTS
Initial calibration documentation included in lab package?	X			
1) Blank plus 4 standards (7196A) or blank plus 3 standards (7199)	X			
2) Correlation coefficient of >0.995 (7196A) or >0.999 (7199)	X			
3) Calibrate daily or each time instrument is set up.	X			
Calibration Check Standard (CCS) for 7196A and Quality Control Sample (QCS) for 7199 Included in Lab Package?	X			
1) %R criteria met? (90 - 110%)	X			
2) Correct frequency of one per every 10 samples	X			
3) CCS and QCS from independent source and at mid- level of calibration curve	X			
Calibration Blanks	X			
1) Analyzed prior to initial calibration standards and after each CCS/QCS?	X			
2) Absolute value should not exceed MDL.	X			
Method Blank, Field Blanks and/or Equipment Blanks Included in Lab Package?	X			
1) Method blank analyzed with each preparation batch?	X			
2) Absolute value should not exceed MDL.	X			
Eh and pH Data	X			
1) Eh and pH data was included and plotted for all samples?	X			
Soluble Matrix Spike Data Included in Lab Package?	X			JC25857-10, JC25857-37/37R, JC25857-54/54T See memo note for JC25857-22
1) Soluble Matrix %R criteria met? (75-125%R).		X		See Table
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?		X		JC25857-10 Initial spiked at 44 mg/kg. The data was not affected. JC25857-37/37R Initial and rerun spiked at 40.161 mg/kg and 49.4 mg/kg, respectively. The data was not affected. JC25857-54/54T Initial and rerun spiked at 62.3 mg/kg and 61.6 mg/kg, respectively. The data was not affected.
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			

ITEM	YES	NO	N/A	COMMENTS
Insoluble Matrix Spike Data Included in Lab Package?	X			JC25857-10, JC25857-37/37R, JC25857-54/54T See memo note for JC25857-22
1) Insoluble Matrix %R criteria met? (75-125%R).		X		See Table
2) Was the spike concentration around 400 to 800 mg/Kg?		X		JC25857-10 Initial spiked at 892 mg/kg. The data was not affected. JC25857-37/37R Initial and rerun spiked at 1090 mg/kg and 1110 mg/kg, respectively. The data was not affected. JC25857-54/54T Initial and rerun spiked at 1140 mg/kg and 1340 mg/kg, respectively. The data was not affected.
Post Digestion Spike	X			See memo note for JC25857-22
1) Post Digestion Spike %R criteria met? (85-115%R).	X	X*		See Table, *selected samples estimated.
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?	X			
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Sample Duplicate Data Included in Lab Package?	X			JC25857-10, 54, 54T, 22, 37, 37R
1) RPD criteria met? (RPD ≤ 20%) if both results are ≥4x RL or control limit of± RL if both results are <4xRL.	X	X**		**JC25857-22, 37R J/UJ See Table
2) Was a sample duplicate analyzed at the frequency of 1 per batch or 20 samples?	X			
Was a Laboratory Control Sample (LCS) Included in Lab Package?	X			
1) %R criteria met? (80-120%R).	X			
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples?	X			
Were any Field Duplicate samples submitted with this SDG?	X			JC25857-52 and JC25857-53
1) RPD criteria met? (RPD < 20%) if both results are ≥4x RL or control limit of± RL if both results are <4xRL.	X			Both results nondetect; accept.
Were all sample quantitation and reporting requirements met?	X			
1) Were all solid samples reported with percent solids > 50%?		X		See Table
2) Were any samples analyzed or reported with dilutions?		X		No dilutions

ITEM	YES	NO	N/A	COMMENTS
Miscellaneous Items	X			
1) For soils by 7196A, was the pH within a range of 7.0-8.0?	X			
2) For soils by 7199, was the pH within a range of 9.0-9.5?			X	
3) For aqueous by 7196A, was the pH with a range of 1.5-2.5?	X			
4) For soils (3060A), was the digestion temperature 90-95C for at least 60 minutes?	X			
5) For 7199, was each sample injected twice and was the RPD ≤20?			X	
Chromium result greater than corresponding hexavalent chromium result where applicable?			NA	No associated Cr results

Matrix Spikes

Sample ID	Lab ID	Analyte	Matrix Spike	% Recovery	Lower Limit	Upper Limit	PDS%/pH ADJ PDS	PDS Limits
ASM-W46A-6.0-6.5	JC25857-37	CHROMIUM (HEXAVALENT)	Soluble	64.1	75	125	78.9 / 92.1	85-115
ASM-W46A-6.0-6.5	JC25857-37	CHROMIUM (HEXAVALENT)	Insoluble	79.5	75	125		
ASM-W46A-6.0-6.5	JC25857-37R	CHROMIUM (HEXAVALENT)	Soluble	38.9	75	125	79.0 / 86.1	85-115
ASM-W46A-6.0-6.5	JC25857-37R	CHROMIUM (HEXAVALENT)	Insoluble	86.7	75	125		
ASM-U49A-8.0-8.5	JC25857-54	CHROMIUM (HEXAVALENT)	Soluble	0.3	75	125	51.1 / 53.5	85-115
ASM-U49A-8.0-8.5	JC25857-54	CHROMIUM (HEXAVALENT)	Insoluble	69.9	75	125		
ASM-U49A-8.0-8.5	JC25857-54T	CHROMIUM (HEXAVALENT)	Soluble	23.4	75	125	70.5 / 70.5	85-115
ASM-U49A-8.0-8.5	JC25857-54T	CHROMIUM (HEXAVALENT)	Insoluble	78.1	75	125		
ASM-U46A-1.0-1.5	JC25857-10	CHROMIUM (HEXAVALENT)	Soluble	80.4	75	125	89.7	85-115
ASM-U46A-1.0-1.5	JC25857-10	CHROMIUM (HEXAVALENT)	Insoluble	102.4	75	125		

Lab Duplicates

Sample ID	Lab ID	Analyte	Sample Result	Duplicate Result	QL	Units	RPD (%)	Action/Associated Prep Batch
ASM-U46A-1.0-1.5	JC25857-10	CHROMIUM (HEXAVALENT)	0.52	0.46	0.44	mg/kg	12.2	Both <4XRL, Abs Diff (0.06)<RL; Accept
ASM-V47A-10.0-10.5	JC25857-22	CHROMIUM (HEXAVALENT)	ND	15.6	0.56	mg/kg	NC	**Sample result ND, Dup Detected at >4XRL; Estimate (J/UJ)/ Batch GP99712 (samp 22-41)**
ASM-W46A-6.0-6.5	JC25857-37R	CHROMIUM (HEXAVALENT)	2.2	3.2	0.50	mg/kg	37	**RPD>20%; Estimate (J/UJ)/ Batch GP99866 (samp 22R-41R)**
ASM-U49A-8.0-8.5	JC25857-54	CHROMIUM (HEXAVALENT)	0.46	0.79	0.63	mg/kg	52.8	Both <4XRL, Abs Diff (0.33)<RL; Accept
ASM-U49A-8.0-8.5	JC25857-54T	CHROMIUM (HEXAVALENT)	ND	0	0.63	mg/kg	0	Both ND, Accept

NC – Not calculable

ND – Not detected

Percent Solids

Sample ID	Percent Solids (%)	Status
ASM-T49A-1.0-1.5	86	ok @50%
ASM-T49A-10.0-10.5	81.4	ok @50%
ASM-T49A-10.5-11.0	84.1	ok @50%
ASM-T49A-11.0-11.5	47.3	<50%
ASM-T49A-2.0-2.5	79.2	ok @50%
ASM-T49A-4.0-4.5	73.5	ok @50%
ASM-T49A-6.0-6.5	58.6	ok @50%
ASM-T49A-8.0-8.5	69.9	ok @50%
ASM-U46A-1.0-1.5	90.9	ok @50%
ASM-U46A-10.0-10.5	86.6	ok @50%
ASM-U46A-12.0-12.5	81.5	ok @50%
ASM-U46A-14.0-14.5	63.2	ok @50%
ASM-U46A-16.0-16.5	45	<50%
ASM-U46A-18.0-18.5	87.3	ok @50%
ASM-U46A-18.5-19.0	41.7	<50%
ASM-U46A-19.0-19.5	47.4	<50%
ASM-U46A-3.0-3.5	88.3	ok @50%
ASM-U46A-5.0-5.5	84	ok @50%
ASM-U46A-6.0-6.5	75.3	ok @50%
ASM-U46A-8.0-8.5	65.6	ok @50%
ASM-U49A-10.0-10.5	80	ok @50%
ASM-U49A-10.5-11.0	80.3	ok @50%
ASM-U49A-11.0-11.5	39.5	<50%
ASM-U49A-2.0-2.5	88.3	ok @50%

Sample ID	Percent Solids (%)	Status
ASM-U49A-4.0-4.5	66.7	ok @50%
ASM-U49A-6.0-6.5	70	ok @50%
ASM-U49A-6.0-6.5X	71.6	ok @50%
ASM-U49A-8.0-8.5	63.7	ok @50%
ASM-V47A-10.0-10.5	70.9	ok @50%
ASM-V47A-12.0-12.5	75.9	ok @50%
ASM-V47A-14.0-14.5	60.1	ok @50%
ASM-V47A-16.0-16.5	57.2	ok @50%
ASM-V47A-17.0-17.5	85.6	ok @50%
ASM-V47A-17.5-18.0	36.6	<50%
ASM-W46A-0.5-1.0	90.5	ok @50%
ASM-W46A-10.0-10.5	75.8	ok @50%
ASM-W46A-12.0-12.5	85.1	ok @50%
ASM-W46A-14.0-14.5	59.2	ok @50%
ASM-W46A-16.0-16.5	77.2	ok @50%
ASM-W46A-17.5-18.0	47.2	<50%
ASM-W46A-18.0-18.5	50.9	ok @50%
ASM-W46A-2.0-2.5	85.4	ok @50%
ASM-W46A-4.0-4.5	86.6	ok @50%
ASM-W46A-6.0-6.5	80.3	ok @50%
ASM-W46A-8.0-8.5	64.6	ok @50%
ASM-W49A-1.0-1.5	83	ok @50%
ASM-W49A-10.0-10.5	85.8	ok @50%
ASM-W49A-10.5-11.0	83.8	ok @50%
ASM-W49A-11.0-11.5	30.5	<50%

Sample ID	Percent Solids (%)	Status
ASM-W49A-2.0-2.5	78.6	ok @50%
ASM-W49A-4.0-4.5	85.1	ok @50%
ASM-W49A-6.0-6.5	81	ok @50%
ASM-W49A-8.0-8.5	83.1	ok @50%

AECOM

SDG#: JC25857/ Method 7196 **Batch: GN51050**	x - concentration	y - response
Cr+6 ICAL 8/25/16	0	0.001
Soil	0.01	0.009
(p. 181 of data pkg)	0.05	0.041
	0.1	0.083
Samples 2-21	0.3	0.239
	0.5	0.400
	0.8	0.637
	1	0.821

				(p. 181 of data pkg)
AECOM Calculated Offset	-0.0007	OK	Reported Offset	-0.0007
AECOM Slope	0.8103	OK	Reported Slope	0.8103
AECOM Calculated r	0.99979	OK	Reported r	0.99979

LCS calculation	**GP99667-B1**	**P.125,181**		
Background Absorbance	0			
Total absorbance	0.792			
Total absorbance - background	0.792			
Instrument Concentration	0.978			
Sample weight (mg/kg)	0.0025			
Final Volume (L)	0.1			
Dilution Factor	1			
AECOM Calculated LCS Result (mg/Kg)	39.1	OK	Reported Result (mg/Kg)	39.1

%R = Found/True*100	**GP99667-B1**	**P.125,181**		
True Value (mg/kg)	40			
AECOM Calculated %R	97.8	OK	Reported %R	97.8

MS calculation	**GP99605-S1**	**P.127,181**	**JC25857-10**	
Background reading	0.001			
Total absorbance	0.662			
Total absorbance - background	0.661			
Instrument Concentration	0.8166			
Sample weight (mg/kg)	0.0025			
Final Volume (L)	0.1			
Percent solids	0.909			
Dilution Factor	1			
AECOM Calculated MS Result (mg/Kg)	35.9	OK	Reported Result (mg/Kg)	35.9

%R = Found/True*100	**GP99605-S1**	**P.127,181**	**JC25857-10**	
True Value (mg/kg)	44			
Native concentration (mg/Kg)	0.52			
AECOM%R	80.5	OK , rounding	Reported %R	80.4

Percent Solids	**JC25857-10**	**P.129**	**ASM-U46A-1.0-1.5**	
Empty dish weight=	23.72			
Wet weight=	32.17			
Dry weight=	31.4			
AECOM%solids =	90.9	OK	reported %solids=	90.9

Reporting Limit	**JC25857-10**	**P.30,181**	**ASM-U46A-1.0-1.5**	
Low Standard	0.01			
Initial weight (mg/kg)	0.0025			
Final volume (L)	0.1			
Percent solids	0.909			
Dilution Factor	1			
Reporting Limit	0.44	OK	Reported RL (mg/Kg)=	0.44

Sample Calculations

	JC25857-10	**P.31,181**	**ASM-U46A-1.0-1.5**	
Background reading	0.002			
Total absorbance	0.011			
Total absorbance - background	0.009			
Instrument Response	0.012			
Sample weight (mg/kg)	0.00251			
Final Volume (L)	0.1			
Percent solids	0.909			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.52	OK	Reported Result (mg/Kg)	0.52

SDG#: JC25857/ Method 7196 **Batch: GN51104**	x - concentration	y - response
Cr+6 ICAL 8/26/16	0	0
Soil	0.01	0.009
(p. 190 of data pkg)	0.05	0.041
	0.1	0.082
Samples 42-54	0.3	0.245
	0.5	0.404
	0.8	0.635
	1	0.823

				(p. 190 of data pkg)
AECOM Calculated Offset	-0.0001	OK	Reported Offset	-0.0001
AECOM Slope	0.8116	OK	Reported Slope	0.8116
AECOM Calculated r	0.99975	OK	Reported r	0.99975

LCS calculation	**GP99702-B1**	**P.125,190**		
Background Absorbance	0			
Total absorbance	0.765			
Total absorbance - background	0.765			
Instrument Concentration	0.943			
Sample weight (mg/kg)	0.0025			
Final Volume (L)	0.1			
Dilution Factor	1			
AECOM Calculated LCS Result (mg/Kg)	37.7	OK	Reported Result (mg/Kg)	37.7

%R = Found/True*100	**GP99702-B1**	**P.125,190**		
True Value (mg/kg)	40			
AECOM Calculated %R	94.3	OK	Reported %R	94.3

MS calculation	**GP99633-S1**	**P.127,190**	**JC25857-54**	
Background reading	0.045			
Total absorbance	0.053			
Total absorbance - background	0.008			
Instrument Concentration	0.0100			
Sample weight (mg/kg)	0.00252			
Final Volume (L)	0.1			
Percent solids	0.637			
Dilution Factor	1			
AECOM Calculated MS Result (mg/Kg)	0.62	OK	Reported Result (mg/Kg)	0.62

%R = Found/True*100	**GP99633-S1**	**P.127,190**	**JC25857-54**	
True Value (mg/kg)	62.3			
Native concentration (mg/Kg)	0.46			
AECOM%R	0.26	OK, rounding	Reported %R	0.30

Percent Solids	**JC25857-54**	**P.136**	**ASM-U49A-8.0-8.5**	
Empty dish weight=	26.92			
Wet weight=	33.22			
Dry weight=	30.93			
AECOM%solids =	63.7	OK	reported %solids=	63.7

Reporting Limit	**JC25857-54**	**P.75,190**	**ASM-U49A-8.0-8.5**	
Low Standard	0.01			
Initial weight (mg/kg)	0.0025			
Final volume (L)	0.1			
Percent solids	0.637			
Dilution Factor	1			
Reporting Limit	0.63	OK	Reported RL (mg/Kg)=	0.63

Sample Calculations

	JC25857-54	**P.75,190**	**ASM-U49A-8.0-8.5**	
Background reading	0.032			
Total absorbance	0.038			
Total absorbance - background	0.006			
Instrument Response	0.008			
Sample weight (mg/kg)	0.00259			
Final Volume (L)	0.1			
Percent solids	0.637			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.46	OK	Reported Result (mg/Kg)	0.46

AECOM

SDG#: JC25857/ Method 7196 **Batch: GN51338**	x - concentration	y - response
Cr+6 ICAL 8/25/16	0	0
Soil	0.01	0.008
(p. 172 of data pkg)	0.05	0.038
	0.1	0.081
Samples 22-41	0.3	0.246
	0.5	0.416
	0.8	0.653
	1	0.817

				(p. 172 of data pkg)
AECOM Calculated Offset	-0.0001	OK	Reported Offset	-0.0001
AECOM Slope	0.8188	OK	Reported Slope	0.8188
AECOM Calculated r	0.99996	OK	Reported r	0.99996

LCS calculation	**GP99712-B1**	**P.124, 172**		
Background Absorbance	0			
Total absorbance	0.804			
Total absorbance - background	0.804			
Instrument Concentration	0.982			
Sample weight (mg/kg)	0.0025			
Final Volume (L)	0.1			
Dilution Factor	1			
AECOM Calculated LCS Result (mg/Kg)	39.3	OK	Reported Result (mg/Kg)	39.3

%R = Found/True*100	**GP99712-B1**	**P.124, 172**		
True Value (mg/kg)	40			
AECOM Calculated %R	98.2	OK	Reported %R	98.2

MS calculation	**GP99712-S1**	**P.127, 172**	**JC25857-37**	
Background reading	0.025			
Total absorbance	0.573			
Total absorbance - background	0.548			
Instrument Concentration	0.6694			
Sample weight (mg/kg)	0.00249			
Final Volume (L)	0.1			
Percent solids	0.803			
Dilution Factor	1			
AECOM Calculated MS Result (mg/Kg)	33.5	OK	Reported Result (mg/Kg) from summary	33.5

%R = Found/True*100	**GP99712-S1**	**P.127, 172**	**JC25857-37**	
True Value (mg/kg)	50.1			
Native concentration (mg/Kg)	1.4			
AECOM%R	64.03	OK, rounding	Reported %R from summary	64.1

Percent Solids	**JC25857-37**	**P.133**	**ASM-W46A-6.0-6.5**	
Empty dish weight=	21.78			
Wet weight=	28.34			
Dry weight=	27.05			
AECOM%solids =	80.3	OK	reported %solids=	80.3

Reporting Limit	**JC25857-37**	**P.58,172**	**ASM-W46A-6.0-6.5**	
Low Standard	0.01			
Initial weight (mg/kg)	0.0025			
Final volume (L)	0.1			
Percent solids	0.803			
Dilution Factor	1			
Reporting Limit	0.50	OK	Reported RL (mg/Kg)=	0.50

Sample Calculations

	JC25857-37	**P.58,172**	**ASM-W46A-6.0-6.5**	
Background reading	0.017			
Total absorbance	0.04			
Total absorbance - background	0.023			
Instrument Response	0.028			
Sample weight (mg/kg)	0.00256			
Final Volume (L)	0.1			
Percent solids	0.803			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	1.4	OK	Reported Result (mg/Kg)	1.4

SDG#: JC25857R/ Method 7196	x - concentration	y - response
Batch: GN51496		
Cr+6 ICAL 8/31/16	0	0.001
Soil	0.01	0.008
(p. 147 of data pkg)	0.05	0.043
	0.1	0.082
Samples 22-41	0.3	0.246
	0.5	0.412
	0.8	0.672
	1	0.825

				(p. 147 of data pkg)
AECOM Calculated Offset	-0.0001	OK	Reported Offset	-0.0001
AECOM Slope	0.8296	OK	Reported Slope	0.8296
AECOM Calculated r	0.99992	OK	Reported r	0.99992

LCS calculation	**GP99866-B1**	**P.56,147**		
Background Absorbance	0			
Total absorbance	0.725			
Total absorbance - background	0.725			
Instrument Concentration	0.874			
Sample weight (mg/kg)	0.0025			
Final Volume (L)	0.1			
Dilution Factor	1			
AECOM Calculated LCS Result (mg/Kg)	35.0	OK	Reported Result (mg/Kg)	35

%R = Found/True*100	**GP99866-B1**	**P.56,147**		
True Value (mg/kg)	40			
AECOM Calculated %R	87.4	OK, rounding	Reported %R	87.5

MS calculation	**GP99866-S1**	**P.58,147**	**JC25857-37R**	
Background reading	0.054			
Total absorbance	0.413			
Total absorbance - background	0.359			
Instrument Concentration	0.4328			
Sample weight (mg/kg)	0.00252			
Final Volume (L)	0.1			
Percent solids	0.803			
Dilution Factor	1			
AECOM Calculated MS Result (mg/Kg)	21.4	OK	Reported Result (mg/Kg)	21.4

%R = Found/True*100	**GP99866-S1**	**P.58,147**	**JC25857-37R**	
True Value (mg/kg)	49.4			
Native concentration (mg/Kg)	2.2			
AECOM%R	38.8	OK, rounding	Reported %R	38.9

Percent Solids	**JC25857-37R**	**P.77**	**ASM-W46A-6.0-6.5**	
Empty dish weight=	21.78			
Wet weight=	28.34			
Dry weight=	27.05			
AECOM%solids =	80.3	OK	reported %solids=	80.3

Reporting Limit	**JC25857-37R**	**P.27,147**	**ASM-W46A-6.0-6.5**	
Low Standard	0.01			
Initial weight (mg/kg)	0.0025			
Final volume (L)	0.1			
Percent solids	0.803			
Dilution Factor	1			
Reporting Limit	0.50	OK	Reported RL (mg/Kg)=	0.50

Sample Calculations

	JC25857-37R	**P.27,147**	**ASM-W46A-6.0-6.5**	
Background reading	0.038			
Total absorbance	0.073			
Total absorbance - background	0.035			
Instrument Response	0.042			
Sample weight (mg/kg)	0.00244			
Final Volume (L)	0.1			
Percent solids	0.803			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	2.2	OK	Reported Result (mg/Kg)	2.2

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Data Validation Report

Project:	PPG-Smith PDI	
Laboratory:	SGS/Accutest, Dayton, NJ	
Laboratory Job No.:	JC26083 and JC26083R	
Analysis/Method:	Hexavalent Chromium SW846 3060A/7196A	
Validation Level:	Full	
Site Location/Address:	70 Carteret Ave, Jersey City, NJ	
AECOM Project No:	60314351.GA.DI.PDI.P3	
Prepared by:	Kristin Rutherford /AECOM	Completed on: 09/13/2016
Reviewed by:	Mary Kozik /AECOM	File Name: JC26083_R_2016-09-13_DVReport-F

Introduction

The data were reviewed in accordance with the FSP-QAPP and the following NJDEP validation Standard Operating Procedure (SOP):

- NJDEP Office of Data Quality SOP 5.A.10, Rev 3 (September 2009), SOP for Analytical Data Validation of Hexavalent Chromium - for USEPA SW-846 Method 3060A, USEPA SW-846 Method 7196A.

The results of quality control data analyzed with site samples were used to assess the overall reliability of the data. The following qualifiers were used to identify data quality issues:

U: Indicates the analyte was not detected in the sample above the sample reporting limit.

J: Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

UJ: Indicates the analyte was not detected above the reporting limit and the reporting limit was approximate.

UB: The analyte concentration is less than or equal to three (3) times the concentration in the associated method/prep blank. The presence of the analyte in the sample is negated (UB) due to laboratory contamination.

JB: The analyte concentration is greater than three (3) times, but less than or equal to ten (10) times the concentration in the associated method/prep blank. The presence of that analyte in the sample is considered "real". The concentration is quantitatively qualified (JB) due to method blank contamination.

R: The sample result was rejected due to serious deficiencies; the presence or absence of the analyte could not be confirmed.

RA: The sample result was rejected but is still considered usable.

Sample Information

The samples listed below were collected by AECOM on August 18, 2016 as part of the PPG-Smith PDI sampling at 70 Carteret Avenue, Jersey City, New Jersey. Only the samples and parameter listed below were validated.

Field ID	Laboratory ID	Matrix	Fraction
ASM-FB20160818 (Equipment Blank)	JC25920-1	Aqueous	Hexavalent Chromium
ASM-V45A-1.0-1.5	JC26083-2,2R	Soil	Hexavalent Chromium
ASM-V45A-11.0-11.5	JC26083-3,3R	Soil	Hexavalent Chromium
ASM-V45A-13.0-13.5	JC26083-4,4R	Soil	Hexavalent Chromium
ASM-V45A-15.0-15.5	JC26083-5,5R	Soil	Hexavalent Chromium
ASM-V45A-17.0-17.5	JC26083-6,6R	Soil	Hexavalent Chromium
ASM-V45A-17.5-18.0	JC26083-7,7R	Soil	Hexavalent Chromium
ASM-V45A-18.0-18.5	JC26083-8,8R	Soil	Hexavalent Chromium
ASM-V45A-3.0-3.5	JC26083-9,9R	Soil	Hexavalent Chromium
ASM-V45A-5.0-5.5	JC26083-10,10R	Soil	Hexavalent Chromium
ASM-V45A-7.0-7.5	JC26083-11,11R	Soil	Hexavalent Chromium
ASM-V45A-7.0-7.5X (Field Duplicate of ASM-V45A-7.0-7.5)	JC26083-12,12R	Soil	Hexavalent Chromium
ASM-V45A-9.0-9.5	JC26083-13,13R	Soil	Hexavalent Chromium
ASM-X43A-1.0-1.5	JC26083-14,14R	Soil	Hexavalent Chromium
ASM-X43A-11.0-11.5	JC26083-15,15R	Soil	Hexavalent Chromium
ASM-X43A-13.0-13.5	JC26083-16,16R	Soil	Hexavalent Chromium
ASM-X43A-15.0-15.5	JC26083-17,17R	Soil	Hexavalent Chromium
ASM-X43A-15.5-16.0	JC26083-18,18R	Soil	Hexavalent Chromium
ASM-X43A-16.0-16.5	JC26083-19,19R	Soil	Hexavalent Chromium
ASM-X43A-3.0-3.5	JC26083-20,20R	Soil	Hexavalent Chromium
ASM-X43A-5.0-5.5	JC26083-21,21R	Soil	Hexavalent Chromium
ASM-X43A-7.0-7.5	JC26083-22,22R	Soil	Hexavalent Chromium
ASM-X43A-9.0-9.5	JC26083-23,23R	Soil	Hexavalent Chromium
ASM-X46A-1.0-1.5	JC26083-24,24R	Soil	Hexavalent Chromium
ASM-X46A-10.5-11.0	JC26083-25,25R	Soil	Hexavalent Chromium
ASM-X46A-12.0-12.5	JC26083-26,26R	Soil	Hexavalent Chromium
ASM-X46A-14.0-14.5	JC26083-27,27R	Soil	Hexavalent Chromium
ASM-X46A-16.0-16.5	JC26083-28,28R	Soil	Hexavalent Chromium
ASM-X46A-18.0-18.5	JC26083-29,29R	Soil	Hexavalent Chromium
ASM-X46A-18.5-19.0	JC26083-30,30R	Soil	Hexavalent Chromium
ASM-X46A-19.0-19.5	JC26083-31,31R	Soil	Hexavalent Chromium
ASM-X46A-2.0-2.5	JC26083-32,32R	Soil	Hexavalent Chromium
ASM-X46A-4.0-4.5	JC26083-33,33R	Soil	Hexavalent Chromium
ASM-X46A-6.0-6.5	JC26083-34,34R	Soil	Hexavalent Chromium
ASM-X46A-8.0-8.5	JC26083-35,35R	Soil	Hexavalent Chromium

The samples were collected following the procedures detailed in the Work Order for Garfield Avenue Remedial Action (GARA) at 70 Carteret Ave, Jersey City, NJ and the Field Sampling Plan/Quality Assurance Project Plan for Non-Residential and Residential Chromium Sites Hudson County, New Jersey (December 2011).

General Comments

The data package was complete. Quality control (QC) issues identified during validation are discussed below. Refer to the Target Analyte Summary Hit List(s) in Attachment A for a listing of all detected results, qualified results, and associated qualifications, where applicable. The nonconformances for each section discussed below are presented in Attachment B.

MS Results

Two matrix spike (MS) samples, ASM-V45A-11.0-11.5 (JC26083-3) and ASM-X46A-1.0-1.5 (JC26083-24), were analyzed with the samples in this SDG and were used for supporting data quality recommendations. MS samples are associated with field samples using matrix similarities as the primary criteria, then by analytical preparation batch when no matrix match is possible. The following table summarizes each of the MS samples, the field samples associated with each, and differentiates between those associated by matrix, and those associated by batch.

Spiked Sample	Samples Associated by Matrix	Samples Associated by Batch
ASM-V45A-11.0-11.5 (JC26083-3)	ASM-V45A-1.0-1.5 ASM-V45A-11.0-11.5 ASM-V45A-13.0-13.5 ASM-V45A-15.0-15.5 ASM-V45A-17.0-17.5 ASM-V45A-17.5-18.0 ASM-V45A-3.0-3.5 ASM-V45A-5.0-5.5 ASM-V45A-9.0-9.5 ASM-X43A-1.0-1.5 ASM-X43A-11.0-11.5 ASM-X43A-15.0-15.5 ASM-X43A-15.5-16.0 ASM-X43A-3.0-3.5 ASM-X46A-10.5-11.0 ASM-X46A-12.0-12.5 ASM-X46A-14.0-14.5 ASM-X46A-16.0-16.5 ASM-X46A-18.0-18.5 ASM-X46A-18.5-19.0 ASM-X46A-6.0-6.5 ASM-X46A-8.0-8.5	ASM-V45A-18.0-18.5 ASM-V45A-7.0-7.5 ASM-V45`A-7.0-7.5X ASM-X43A-13.0-13.5 ASM-X43A-16.0-16.5
ASM-X46A-1.0-1.5 (JC26083-24)	ASM-X43A-5.0-5.5 ASM-X43A-7.0-7.5 ASM-X46A-1.0-1.5 ASM-X46A-2.0-2.5	ASM-X43A-9.0-9.5 ASM-X46A-1.0-1.5 ASM-X46A-19.0-19.5 ASM-X46A-4.0-4.5

MS sample ASM-V45A-11.0-11.5

For the MS on sample ASM-V45A-11.0-11.5 (JC26083-3), the soluble and insoluble MS recoveries from the initial batch were 0.2% and 103.4%, respectively. The soluble MS recovery did not meet QC criteria of 75-125% and was less than 50%. The post digestion spike (PDS) recovery was 78.2%, which did not meet the PDS criteria of 85-115%. The PDS result was 86.3% after pH adjustment.

Based on the low MS recoveries, the MS sample was reanalyzed using Method 7196. The soluble and insoluble MS recoveries from the reanalysis were 0% and 58.1%. The MS recoveries did not meet the QC criteria of 75-125% and the soluble MS was less than 50%. The PDS result was 68.3%, which did not meet the PDS criteria of 85-115%. The PDS result was 104% after pH adjustment.

Since the matrix spikes and post digestion spikes failed to meet QC criteria, additional parameters were analyzed to determine if possible matrix interferences could be the cause for the poor matrix spike recoveries. All the samples were tested for pH and oxidation reduction potential (ORP), and plotted on an Eh/pH phase diagram. From this chart, the source sample for the matrix spike analysis, ASM-V45A-11.0-11.5, was plotted below the phase change line, indicating reducing potential within the sample matrix, incapable of supporting hexavalent chromium. Ferrous iron, sulfide screen, and total organic carbon (TOC) were performed on this matrix spike source sample to confirm the oxidizing/reducing potential within the sample matrix. The sulfide screen was reported as nondetect, indicating no reducing agents within the sample matrix; however, the ferrous iron (0.77%) and the TOC results (29,200 mg/Kg) were positive, indicating potential reducing agents within the sample matrix.

Since the soluble MS and/or insoluble MS and PDS recoveries from both the initial and reanalysis did not meet the MS QC requirements, but at least one MS recovery was greater than 50%, the highest detected hexavalent chromium result or the nondetect hexavalent chromium result with the lowest RL between the initial and reanalysis was reported for each soil sample. The reported hexavalent chromium results for the associated samples were qualified as estimated (J/UJ) due to the low soluble MS and PDS recoveries.

MS sample ASM-X46A-1.0-1.5

Sample ASM-X46A-1.0-1.5 (JC26083-24) was selected for the soil matrix spike analysis and used for supporting data quality recommendations. The soluble and insoluble MS recoveries from the initial batch were 72.3% and 114.9%, respectively, which did not meet QC criteria of 75-125%R. The PDS recovery was 84.1% and after pH adjustment was 82.6% which did not meet the PDS criteria of 85-115%.

Based on the low MS recoveries, the MS sample was reanalyzed using Method 7196. The soluble and insoluble MS results from the reanalysis were 12.3% and 80.7%. The soluble MS recovery did not meet the QC criteria of 75-125% and was less than 50%. The PDS result was 78.3% and after pH adjustment was 72.4% which did not meet the PDS criteria of 85-115%.

Since the matrix spikes and post digestion spikes failed to meet QC criteria, additional parameters were analyzed to determine if possible matrix interferences could be the cause for the poor matrix spike recoveries. All the samples were tested for pH and ORP, and plotted on an Eh/pH phase diagram. From this chart, the source sample for the matrix spike analysis, ASM-X46A-1.0-1.5, was plotted on the phase change line, indicating neither reducing nor oxidizing potential within the sample matrix. Ferrous iron, sulfide screen, and TOC were performed on this matrix spike source sample to confirm the oxidizing/reducing potential within the sample matrix. The sulfide screen was reported as nondetect, indicating no reducing agents within the sample matrix; however, the ferrous iron (0.47%) and the TOC results (77,700 mg/Kg) were positive, indicating potential reducing agents within the sample matrix.

Since the soluble MS recoveries and PDS recoveries from both the initial and reanalysis did not meet the MS QC requirements, but at least one MS recovery was greater than 50%, the highest detected hexavalent chromium result or the nondetect hexavalent chromium result with the lowest RL between the initial and reanalysis was reported for each soil sample. The reported hexavalent chromium results for the associated samples were qualified as estimated (J/UJ) due to the low soluble MS and PDS recoveries.

Laboratory Duplicates

There were two sets of laboratory duplicates associated with this SDG.

Sample ASM-V45A-11.0-11.5 (JC26083-3), associated with samples JC26083-2 through JC26083-21, was selected by the laboratory to demonstrate laboratory precision capabilities. Precision criteria were met; no qualifications were made.

Sample ASM-X46A-1.0-1.5 (JC26083-24), associated with samples JC26083-22 through JC26083-35, was selected by the laboratory to demonstrate laboratory precision capabilities. The relative percent difference (RPD) for hexavalent chromium met the QC acceptance criteria in the initial analysis and exceeded criteria in the reanalysis; therefore, the hexavalent chromium results reported from the reanalysis for the associated soil samples were qualified as estimated (J/UJ).

Field Duplicate Results

The field duplicate pair in this SDG was ASM-V45A-7.0-7.5 (JC26083-11) and ASM-V45A-7.0-7.5X (JC26083-12).

The reported result (refer to MS section above) for the parent sample was less than four times the RL and reported field duplicate result was greater than four times the RL. The absolute difference between the reported field duplicate results was greater than the absolute difference criteria of less than or equal to the RL; therefore; all reported hexavalent chromium soil results were qualified as estimated (J/UJ).

Percent Solids

The moisture content for sample ASM-V45A-18.0-18.5 exceeded the acceptable limit of 50%; therefore, the result was qualified (J) as estimated.

Sample Results

Sample ASM-X46A-4.0-4.5 had results that significantly differed between the initial analysis and reanalysis, such that one result exceeded the project action limit of 20 mg/kg. The highest detected hexavalent chromium result between the initial analysis and reanalysis was reported for each sample in this SDG.

Reported results (flagged B by the laboratory) that were less than the reporting limit (RL) but greater than or equal to the method detection limit (MDL) are approximate values and have been qualified as estimated (J).

Data Quality and Usability

In general, these data appear to be valid and may be used for decision-making purposes. No data were rejected. Qualified and detected results are presented in Attachments A and B.

The hexavalent chromium results for all soil samples in this SDG are usable as estimated values with the potential for low bias due to low soluble MS and PDS recoveries, and since the MS sample matrices appear to be reducing based on the Eh-pH plot, the presence of TOC, and/or the presence of ferrous iron. The highest detected hexavalent chromium result, or the nondetected result with the lowest RL, was reported for each soil sample.

Sample results qualified due to poor laboratory duplicate precision and/or field duplicate precision are usable as estimated values with an unknown direction of bias.

Sample results reported between the MDL and RL, and/or qualified due to high percent moisture content are usable as estimated values with an unknown direction of bias.

ATTACHMENTS

Attachment A: Target Analyte Summary Hitlist(s)

Attachment B: Data Validation Report Form

Attachment A

Target Analyte Summary Hitlist(s)

Soil Target Analyte Summary Hit List (Hexavalent Chromium)

Site Name PPG-Smith PDI
Sampling Date August 18, 2016
Lab Name/ID SGS/Accutest, Dayton, NJ
SDG No JC26083, JC26083R
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID ASM-FB20160818

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
ASM-V45A-1.0-1.5	JC26083-2R	CHROMIUM (HEXAVALENT)	U	0.82	0.82	0.44	Qualify	2,4
ASM-V45A-11.0-11.5	JC26083-3	CHROMIUM (HEXAVALENT)	U	0.90	0.90	0.48	Qualify	2,4
ASM-V45A-13.0-13.5	JC26083-4R	CHROMIUM (HEXAVALENT)	U	1.3	1.3	0.49	Qualify	2,4
ASM-V45A-15.0-15.5	JC26083-5	CHROMIUM (HEXAVALENT)	U	0.57	0.57	0.51	Qualify	2,4
ASM-V45A-17.0-17.5	JC26083-6	CHROMIUM (HEXAVALENT)	U	U	U	0.64	Qualify	2,4
ASM-V45A-17.5-18.0	JC26083-7R	CHROMIUM (HEXAVALENT)	U	2.7	2.7	0.49	Qualify	2,4
ASM-V45A-18.0-18.5	JC26083-8	CHROMIUM (HEXAVALENT)	U	0.87B	0.87	0.98	Qualify	1,2,3,4
ASM-V45A-3.0-3.5	JC26083-9	CHROMIUM (HEXAVALENT)	U	0.39B	0.39	0.44	Qualify	1,2,4
ASM-V45A-5.0-5.5	JC26083-10R	CHROMIUM (HEXAVALENT)	U	0.46	0.46	0.44	Qualify	2,4
ASM-V45A-7.0-7.5	JC26083-11	CHROMIUM (HEXAVALENT)	U	1.7	1.7	0.52	Qualify	2,4
ASM-V45A-7.0-7.5X	JC26083-12R	CHROMIUM (HEXAVALENT)	U	2.9	2.9	0.53	Qualify	2,4
ASM-V45A-9.0-9.5	JC26083-13	CHROMIUM (HEXAVALENT)	U	0.54B	0.54	0.62	Qualify	1,2,4
ASM-X43A-1.0-1.5	JC26083-14	CHROMIUM (HEXAVALENT)	U	5.5	5.5	0.45	Qualify	2,4
ASM-X43A-11.0-11.5	JC26083-15R	CHROMIUM (HEXAVALENT)	U	0.65	0.65	0.54	Qualify	2,4
ASM-X43A-13.0-13.5	JC26083-16	CHROMIUM (HEXAVALENT)	U	0.65B	0.65	0.72	Qualify	1,2,4
ASM-X43A-15.0-15.5	JC26083-17	CHROMIUM (HEXAVALENT)	U	0.40B	0.40	0.47	Qualify	1,2,4
ASM-X43A-15.5-16.0	JC26083-18	CHROMIUM (HEXAVALENT)	U	1.0	1.0	0.48	Qualify	2,4
ASM-X43A-16.0-16.5	JC26083-19R	CHROMIUM (HEXAVALENT)	U	1.1	1.1	0.79	Qualify	2,4

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
ASM-X43A-3.0-3.5	JC26083-20R	CHROMIUM (HEXAVALENT)	U	1.5	1.5	0.44	Qualify	2,4
ASM-X43A-5.0-5.5	JC26083-21	CHROMIUM (HEXAVALENT)	U	1.3	1.3	0.47	Qualify	2,4
ASM-X43A-7.0-7.5	JC26083-22R	CHROMIUM (HEXAVALENT)	U	14.1	14.1	0.51	Qualify	2,4,5
ASM-X43A-9.0-9.5	JC26083-23	CHROMIUM (HEXAVALENT)	U	U	U	0.57	Qualify	2,4
ASM-X46A-1.0-1.5	JC26083-24R	CHROMIUM (HEXAVALENT)	U	12.9	12.9	0.43	Qualify	2,4,5
ASM-X46A-10.5-11.0	JC26083-25	CHROMIUM (HEXAVALENT)	U	11.2	11.2	0.49	Qualify	2,4
ASM-X46A-12.0-12.5	JC26083-26R	CHROMIUM (HEXAVALENT)	U	0.76	0.76	0.50	Qualify	2,4,5
ASM-X46A-14.0-14.5	JC26083-27	CHROMIUM (HEXAVALENT)	U	0.97	0.97	0.50	Qualify	2,4
ASM-X46A-16.0-16.5	JC26083-28	CHROMIUM (HEXAVALENT)	U	0.74	0.74	0.47	Qualify	2,4
ASM-X46A-18.0-18.5	JC26083-29	CHROMIUM (HEXAVALENT)	U	U	U	0.48	Qualify	2,4
ASM-X46A-18.5-19.0	JC26083-30	CHROMIUM (HEXAVALENT)	U	1.6	1.6	0.74	Qualify	2,4
ASM-X46A-19.0-19.5	JC26083-31	CHROMIUM (HEXAVALENT)	U	U	U	0.47	Qualify	2,4
ASM-X46A-2.0-2.5	JC26083-32	CHROMIUM (HEXAVALENT)	U	3.6	3.6	0.49	Qualify	2,4
ASM-X46A-4.0-4.5	JC26083-33	CHROMIUM (HEXAVALENT)	U	153	153	5.5	Qualify	2,4
ASM-X46A-6.0-6.5	JC26083-34	CHROMIUM (HEXAVALENT)	U	0.57	0.57	0.47	Qualify	2,4
ASM-X46A-8.0-8.5	JC26083-35R	CHROMIUM (HEXAVALENT)	U	3.5	3.5	0.52	Qualify	2,4,5

Note: A “U” under Method Blank column indicates a nondetect result.
A “U” under the Laboratory Sample Result and Validation Sample Result columns indicates a nondetect result at the RL.

NJDEP Laboratory Footnote

1. The reported result was greater than the MDL but less than the RL and therefore was estimated.
2. The reported result was estimated because the soluble and/or insoluble matrix spike recoveries were less than 75%, but greater than 50%, and the PDS recoveries were outside the PDS QC criteria.
3. The reported result was estimated because the sample moisture content was greater than 50 percent.
4. The reported result was estimated because of poor field duplicate precision.
5. The reported result was estimated because of poor laboratory duplicate precision.

Attachment B

Data Validation Report Form

Client Name: PPG Industries	**Project Number:** 60314351.GA.DI.PDI.P3
Site Location: PPG-Smith PDI, Jersey City, NJ	**Project Manager:** Aimee Ruiter
Laboratory: SGS/Accutest, Dayton, NJ	**Type of Validation:** Full
Laboratory Job No: JC26083 and JC26083R	**Date Checked:** 09/13/2016
Validator: Kristin Rutherford	**Peer:** Sharon McKechnie

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X			
Field I.D. included?	X			
Laboratory I.D. included?	X			
Did data package sample IDs match sample IDs on COC?	X			
Did electronic data deliverable (EDD) sample IDs match COC sample IDs?	X			
Did data package sample IDs match electronic data deliverable (EDD) sample IDs?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6ºC?	X			5.6, 5.5 ºC
Signed COCs included?	X			
Date of sample collection included?	X			
Date of sample digestion included?	X			
Holding time to digestion met criteria? (Soils -30 days from collection to digestion.)	X			
Date of analysis included?	X			
Holding time to analysis met criteria? (Soils -168 hours from digestion to analysis; Aqueous - 24 hours from collection to analysis.	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			
Definitions: MDL - Method Detection Limit; %R - Percent Recovery; RL - Reporting Limit; RPD - Relative Percent Difference; RSD - Relative Standard Deviation :Corr - Correlation Coefficient.				

ITEM	YES	NO	N/A	COMMENTS
Initial calibration documentation included in lab package?	X			
1) Blank plus 4 standards (7196A) or blank plus 3 standards (7199)	X			
2) Correlation coefficient of =0.995 (7196A) or =0.999 (7199)	X			
3) Calibrate daily or each time instrument is set up.	X			
Calibration Check Standard (CCS) for 7196A and Quality Control Sample (QCS) for 7199 Included in Lab Package?	X			
1) %R criteria met? (90 - 110%)	X			
2) Correct frequency of one per every 10 samples	X			
3) CCS and QCS from independent source and at mid- level of calibration curve	X			
Calibration Blanks	X			
1) Analyzed prior to initial calibration standards and after each CCS/QCS?	X			
2) Absolute value should not exceed MDL.	X			
Method Blank, Field Blanks and/or Equipment Blanks Included in Lab Package?	X			
1) Method blank analyzed with each preparation batch?	X			
2) Absolute value should not exceed MDL.	X			
Eh and pH Data	X			
1) Eh and pH data was included and plotted for all samples?	X			
Soluble Matrix Spike Data Included in Lab Package?	X			JC26083-3, -3R and JC26083-24, -24R
1) Soluble Matrix %R criteria met? (75-125%R).		X		See nonconformance tables.
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?	X			JC26083-3: Spiked at 45.8 and 47.5 mg/kg. JC26083-24: Spiked at 41.9 and 43.3 mg/kg.
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Insoluble Matrix Spike Data Included in Lab Package?	X			
1) Insoluble Matrix %R criteria met? (75-125%R).		X		See nonconformance tables.
2) Was the spike concentration around 400 to 800 mg/Kg?		X		JC26083-3: Spiked at 951 and 1490 mg/kg. No impact on data. JC26083-24: Spiked at 863 and 1220 mg/kg. No impact on data.
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			

ITEM	YES	NO	N/A	COMMENTS
Post Digestion Spike	X			
1) Post Digestion Spike %R criteria met? (85-115%R).		X		See nonconformance tables.
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?	X			
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Sample Duplicate Data Included in Lab Package?	X			JC26083-3, -3R and JC26083-24, -24R
1) RPD criteria met? (RPD < 20%) if both results are ≥4x RL or control limit of± RL if both results are <4xRL.		X		See nonconformance table below.
2) Was a sample duplicate analyzed at the frequency of 1 per batch or 20 samples?	X			
Was a Laboratory Control Sample (LCS) Included in Lab Package?	X			
1) %R criteria met? (80-120%R).	X			
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples?	X			
Were any Field Duplicate samples submitted with this SDG?	X			ASM-V45A-7.0-7.5 and ASM-V45A-7.0-7.5X
1) RPD criteria met? (RPD < 20%) if both results are ≥4x RL or control limit of± RL if both results are <4xRL.		X		Qualify (J/UJ) associated results since one result >4XRL, the other is <4XRL, and RPD >20% and abs diff is >RL.
Were all sample quantitation and reporting requirements met?	X			
1) Were all solid samples reported with percent solids > 50%?		X		See nonconformance table below, qualify (J/UJ).
2) Were any samples analyzed or reported with dilutions?	X			ASM-X46A-4.0-4.5 (10X) Sample ASM-X46A-4.0-4.5 results were significantly different between initial and reanalysis; one result >20mg/kg action limit
Miscellaneous Items	X			
1) For soils by 7196A, was the pH within a range of 7.0-8.0?	X			
2) For soils by 7199, was the pH within a range of 9.0-9.5?			X	
3) For aqueous by 7196A, was the pH with a range of 1.5-2.5?	X			
4) For soils (3060A), was the digestion temperature 90-95C for at least 60 minutes?	X			
5) For 7199, was each sample injected twice and was the RPD ≤20?			X	

Matrix Spikes

Sample ID	Lab ID	Analyte	Matrix Spike	% Recovery	Lower Limit	Upper Limit	PDS%	PDS pH Adj %R	PDS Limits
ASM-V45A-11.0-11.5	JC26083-3	CHROMIUM (HEXAVALENT)	Soluble	0.2	75	125	78.2	86.2	85-115
ASM-V45A-11.0-11.5	JC26083-3	CHROMIUM (HEXAVALENT)	Insoluble	103.4	75	125			
ASM-V45A-11.0-11.5	JC26083-3R	CHROMIUM (HEXAVALENT)	Soluble	0	75	125	68.3	104	85-115
ASM-V45A-11.0-11.5	JC26083-3R	CHROMIUM (HEXAVALENT)	Insoluble	58.1	75	125			
ASM-X46A-1.0-1.5	JC26083-24	CHROMIUM (HEXAVALENT)	Soluble	72.3	75	125	84.1	82.6	85-115
ASM-X46A-1.0-1.5	JC26083-24	CHROMIUM (HEXAVALENT)	Insoluble	114.9	75	125			
ASM-X46A-1.0-1.5	JC26083-24R	CHROMIUM (HEXAVALENT)	Soluble	12.3	75	125	78.3	72.4	85-115
ASM-X46A-1.0-1.5	JC26083-24R	CHROMIUM (HEXAVALENT)	Insoluble	80.7	75	125			

Note: NA – Not applicable

Lab Duplicates

Sample ID	Lab ID	Analyte	Sample Result	Qual	Duplicate Result	Qual	QL	Units	RPD	Action
ASM-V45A-11.0-11.5	JC26083-3	CHROMIUM (HEXAVALENT)	0.90		0.68		0.48	mg/kg	27.8	Accept, Abs diff < RL
ASM-V45A-11.0-11.5	JC26083-3R	CHROMIUM (HEXAVALENT)	0.33	U	0.0		0.48	mg/kg	0	None, both results ND
ASM-X46A-1.0-1.5	JC26083-24	CHROMIUM (HEXAVALENT)	2.8		3.1		0.43	mg/kg	10.2	None, criteria met
ASM-X46A-1.0-1.5	JC26083-24R	CHROMIUM (HEXAVALENT)	12.9		1.2		0.43	mg/kg	166	**Qualify (J/UJ) associated samples* reported from reanalysis**
***Associated samples in QC batch GP99762/GN51210**: JC26083-22, JC26083-23, JC26083-24, JC26083-25, JC26083-26, JC26083-27, JC26083-28, JC26083-29, JC26083-30, JC26083-31, JC26083-32, JC26083-33, JC26083-34, JC26083-35										

Field Duplicates
ASM-V45A-7.0-7.5 and ASM-V45A-7.0-7.5X

Sample ID	FD ID	Analyte	Sample Result	Qual	FD Result	Qual	QL	Units	Abs Diff	Action
ASM-V45A-7.0-7.5	ASM-V45A-7.0-7.5X	CHROMIUM (HEXAVALENT)	1.7		2.9		0.52	mg/kg	1.2	**Qualify (J/UJ) results in all soils in this SDG**

Percent Solids

Sample ID	Lab ID	Percent Solids (%)	Status
ASM-V45A-18.0-18.5	JC26083-8	40.9	<50%

SDG#: JC26083 / Method 7196	x - concentration	y - response
Batch: GN51169		
Cr+6 ICAL 8/27/16	0	0
Soil	0.01	0.009
(p. 115 of data pkg)	0.05	0.04
	0.1	0.082
	0.3	0.242
	0.5	0.411
	0.8	0.660
	1	0.816

(p. 115 of data pkg)

AECOM Calculated Offset	-0.0003	OK	Reported Offset	-0.0003
AECOM Slope	0.8196	OK	Reported Slope	0.8196
AECOM Calculated r	0.99996	OK	Reported r	0.99996

LCS calculation	**GP99761-B1**	**P. 84, 115**		
Background Absorbance	0			
Total absorbance	0.696			
Total absorbance - background	0.696			
Instrument Concentration	0.850			
Sample weight (mg/kg)	0.0025			
Final Volume (L)	0.1			
Dilution Factor	1			
AECOM Calculated LCS Result (mg/Kg)	34.0	OK	Reported Result (mg/Kg)	34.0

%R = Found/True*100	**GP99761-B1**	**P. 84, 115**		
True Value (mg/kg)	40			
AECOM Calculated %R	85.0	OK	Reported %R	85.0

MS calculation	**GP99761-S2**	**P. 86, 115**	**JC26083-3**	
Background reading	0			
Total absorbance	0.338			
Total absorbance - background	0.338			
Instrument Concentration	0.4127			
Sample weight (mg/kg)	0.0025			
Final Volume (L)	0.1			
Percent solids	0.839			
Dilution Factor	50			
AECOM Calculated MS Result (mg/Kg)	984	OK	Reported Result (mg/Kg)	984

%R = Found/True*100	**GP99761-S2**	**P. 86, 115**	**JC26083-3**	
True Value (mg/kg)	951			
Native concentration (mg/Kg)	0.9			
AECOM%R	103.4	OK	Reported %R	103.4

Percent Solids	**JC26083-3**	**P. 87**	**ASM-V45A-11.0-11.5**	
Empty dish weight=	15.73			
Wet weight=	21.57			
Dry weight=	20.63			
AECOM %solids =	83.9	OK	Reported %solids=	83.9

Reporting Limit	**JC26083-3**	**P. 50, 114**	**ASM-V45A-11.0-11.5**	

Low Standard	0.01			
Initial weight (mg/kg)	0.00247			
Final volume (L)	0.1			
Percent solids	0.839			
Dilution Factor	1			
Reporting Limit	0.48	OK	Reported RL (mg/Kg)=	0.48

Sample Calculations	**JC26083-3**	**P. 50, 114**	**ASM-V45A-11.0-11.5**	
Background reading	0.02			
Total absorbance	0.035			
Total absorbance - background	0.015			
Instrument Response	0.019			
Sample weight (mg/kg)	0.00247			
Final Volume (L)	0.1			
Percent solids	0.839			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.90	OK	Reported Result (mg/Kg)	0.90

***JC26083-3 associated with samples** (QC batch): JC26083-2, JC26083-3, JC26083-4, JC26083-5, JC26083-6, JC26083-7, JC26083-9, JC26083-10, JC26083-13, JC26083-14, JC26083-15, JC26083-17, JC26083-18, JC26083-20, JC26083-25, JC26083-26, JC26083-27, JC26083-28, JC26083-29, JC26083-30, JC26083-34, JC26083-35
(by matrix): JC26083-8, JC26083-11, JC26083-12, JC26083-16, JC26083-19

SDG#: JC26083 / Method 7196	x - concentration	y - response
Batch: GN51210		
Cr+6 ICAL 8/29/16	0	0
Soil	0.01	0.008
(p. 124 of data pkg)	0.05	0.041
	0.1	0.088
	0.3	0.253
	0.5	0.401
	0.8	0.659
	1	0.837

(p. 124 of data pkg)

AECOM Calculated Offset	-0.0001	OK	Reported Offset	-0.0001
AECOM Slope	0.8290	OK	Reported Slope	0.8290
AECOM Calculated r	0.99978	OK	Reported r	0.99978

LCS calculation	**GP99762-B1**	**P. 84, 124**		
Background Absorbance	0			
Total absorbance	0.699			
Total absorbance - background	0.699			
Instrument Concentration	0.843			
Sample weight (mg/kg)	0.0025			
Final Volume (L)	0.1			
Dilution Factor	1			
AECOM Calculated LCS Result (mg/Kg)	33.7	OK	Reported Result (mg/Kg)	33.7

%R = Found/True*100	**GP99762-B1**	**P. 84, 124**		
True Value (mg/kg)	40			
AECOM Calculated %R	84.3	OK	Reported %R	84.3

MS calculation	**GP99762-S2**	**P. 86, 124**	**JC26083-24**	
Background reading	0			
Total absorbance	0.387			
Total absorbance - background	0.387			
Instrument Concentration	0.4670			
Sample weight (mg/kg)	0.00251			
Final Volume (L)	0.1			
Percent solids	0.936			
Dilution Factor	50			
AECOM Calculated MS Result (mg/Kg)	994	OK	Reported Result (mg/Kg)	994

%R = Found/True*100	**GP99762-S2**	**P. 86, 124**	**JC26083-24**	
True Value (mg/kg)	863			
Native concentration (mg/Kg)	2.8			
AECOM%R	114.8	OK, rounding	Reported %R	114.9

Percent Solids	**JC26083-24**	**P. 90**	**ASM-X46A-1.0-1.5**	
Empty dish weight=	23.42			
Wet weight=	29.85			
Dry weight=	29.44			
AECOM %solids =	93.6	OK	Reported %solids=	93.6

Reporting Limit	**JC26083-24**	**P. 38, 124**	**ASM-X46A-1.0-1.5**

Low Standard	0.01			
Initial weight (mg/kg)	0.00247			
Final volume (L)	0.1			
Percent solids	0.936			
Dilution Factor	1			
Reporting Limit	0.43	OK	Reported RL (mg/Kg)=	0.43

Sample Calculations	**JC26083-24**	**P. 38, 124**	**ASM-X46A-1.0-1.5**	
Background reading	0.022			
Total absorbance	0.075			
Total absorbance - background	0.053			
Instrument Response	0.064			
Sample weight (mg/kg)	0.00247			
Final Volume (L)	0.1			
Percent solids	0.936			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	2.8	OK	Reported Result (mg/Kg)	2.8

***JC26083-24 associated with samples** (QC batch): JC26083-23, JC26083-31, JC26083-33
(by matrix): JC26083-21, JC26083-22, JC26083-24, JC26083-32

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Data Validation Report

Project:	Site 135 South Pit Bottom	
Laboratory:	SGS/Accutest, Dayton, NJ	
Laboratory Job No.:	JC26570 and JC26570R	
Analysis/Method:	Hexavalent Chromium SW846 3060A/7196	
Validation Level:	Full	
Site Location/Address:	PPG Site 135 - Garfield Avenue, Jersey City, NJ	
AECOM Project No:	60482955.GA.RA.OSS.2016	
Prepared by:	Sharon McKechnie/AECOM	Completed on: 09/06/2016
Reviewed by:	Mary Kozik/AECOM	File Name: JC26570_R_2016_09_06_DVReport-F

Introduction

The data were reviewed in accordance with the FSP-QAPP and the following NJDEP validation Standard Operating Procedure (SOP):

- NJDEP Office of Data Quality SOP 5.A.10, Rev 3 (September 2009), SOP for Analytical Data Validation of Hexavalent Chromium - for USEPA SW-846 Method 3060A, USEPA SW-846 Method 7196A.

The results of quality control data analyzed with site samples were used to assess the overall reliability of the data. The following qualifiers were used to identify data quality issues:

U: Indicates the analyte was not detected in the sample above the sample reporting limit.

J: Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

UJ: Indicates the analyte was not detected above the reporting limit and the reporting limit was approximate.

UB: The analyte concentration is less than or equal to three (3) times the concentration in the associated method/prep blank. The presence of the analyte in the sample is negated (UB) due to laboratory contamination.

JB: The analyte concentration is greater than three (3) times, but less than or equal to ten (10) times the concentration in the associated method/prep blank. The presence of that analyte in the sample is considered "real". The concentration is quantitatively qualified (JB) due to method blank contamination.

R: The sample result was rejected due to serious deficiencies; the presence or absence of the analyte could not be confirmed.

RA: The sample result was rejected but is still considered usable.

Sample Information

The samples listed below were collected by AECOM on August 26, 2016 as part of the Site 135 South Pit Bottom sampling at PPG Site 135 - Garfield Avenue, Jersey City, New Jersey. Only the samples and parameter listed below were validated.

Field ID	Laboratory ID	Matrix	Fraction
135-CC30A-SW-E-4.4-4.9	JC26570-5,5R	Soil	Hexavalent Chromium
135-CC30A-SW-E-6.4-6.9	JC26570-4,4R	Soil	Hexavalent Chromium
135-CC30A-SW-E-8.4-8.9	JC26570-2,2R	Soil	Hexavalent Chromium
135-CC30A-SW-E-8.4-8.9X (Field Duplicate of 135-CC30A-SW-E-8.4-8.9)	JC26570-3,3R	Soil	Hexavalent Chromium
135-FB20160826 (Equipment Blank)	JC26570-1	Aqueous	Hexavalent Chromium

The samples were collected following the procedures detailed in the Work Order for Garfield Avenue Remedial Action (GARA) at PPG Site 135 - Garfield Avenue, Jersey City, New Jersey and the Field Sampling Plan/Quality Assurance Project Plan for Non-Residential and Residential Chromium Sites Hudson County, New Jersey (December 2011).

General Comments

The data package was complete except as noted below:

- The Chain-of-Custody (COC) listed a date of 8/19/2016 for sample 135-CC30A-SW-E-8.4-8.9X; however, the correct date of collection in 8/26/2016. The data package and electronic data deliverable (EDD) were issued with the incorrect sample collection date. The laboratory was contacted for a revision during validation.

Quality control (QC) issues identified during validation are discussed below. Refer to the Target Analyte Summary Hitlist(s) in Attachment A for a listing of all detected results, qualified results, and associated qualifications, where applicable. The nonconformances for each section discussed below are presented in Attachment B.

MS Results

MS sample 135-CC30A-SW-E-4.4-4.9

For the matrix spike (MS) on sample 135-CC30A-SW-E-4.4-4.9, the soluble and insoluble MS recoveries from the initial batch by Method 7196 were 1.1% and 65.8%, respectively. Both MS recoveries failed to meet the quality control (QC) criteria of 75-125%, and the soluble MS recovery was less than 50%. The post digestion spike (PDS) recovery was 90.4%, which met the PDS criteria of 85-115%.

Based on the low soluble MS recovery of less than 50%, the samples were reanalyzed using Method 7196. The soluble and insoluble MS results from the reanalysis were 0% and 76.2%, respectively. The soluble MS recovery failed to meet the quality control (QC) criteria of 75-125%, and was again less than 50%. The post digestion spike (PDS) recovery was 85.5%, which met the PDS criteria of 85-115%.

Since the matrix spikes failed to meet QC criteria, additional parameters were analyzed to determine if matrix interference could be the cause for the poor matrix spike recoveries. All samples included in this sample data group (SDG) were tested for pH and oxidation-reduction potential (ORP), and plotted on an Eh/pH phase diagram. From this chart, the source sample for the matrix spike analysis of

sample 135-CC30A-SW-E-4.4-4.9 was plotted below the phase change line, indicating reducing potential with the sample matrix, which suggests the sample matrix environment is incapable of supporting hexavalent chromium. To confirm the oxidizing/reducing potential within the sample matrix, the additional ancillary parameters ferrous iron, sulfide screen, and total organic carbon (TOC) were analyzed for the matrix spike source sample. The sulfide screen was reported as nondetect, indicating no reducing agents within the sample matrix; however, the ferrous iron (0.78%) and the TOC results (63,900 mg/kg) were positive, indicating potential reducing agents within the sample matrix.

Since the soluble MS recoveries from both the initial and reanalysis were less than 50%, but both insoluble MS recoveries were above 50%, the highest detected hexavalent chromium result was reported for each soil sample. The reported hexavalent chromium results in all the soil samples in this SDG were qualified as estimated (J) due to the poor MS recoveries.

Field Duplicates

Samples 135-CC30A-SW-E-8.4-8.9 (JC26570-2) and 135-CC30A-SW-E-8.4-8.9X (JC26570-3R) were the field duplicate (FD) pair associated with the samples in this SDG.

The relative percent difference (RPD) between the parent sample result and the field duplicate was 48.6%, which was outside the FD criteria. The parent sample result was greater than 4 times the reporting limit (RL), and the duplicate result was less than 4 times the RL. Therefore, all reported hexavalent chromium results in this SDG were qualified (J) as estimated.

Sample Results

Reported results (flagged B by the laboratory) that were less than the RL, but greater than or equal to the method detection limit (MDL) are approximate values and have been qualified as estimated (J).

Data Quality and Usability

In general, these data appear to be valid and may be used for decision-making purposes. No data were rejected. Qualified and detected results are presented in Attachments A and B.

The hexavalent chromium soil results in this SDG are usable as estimated values with the potential for low bias due to low MS recoveries, and since the MS sample matrix appears to be reducing based on the Eh-pH plot and the presence of TOC and ferrous iron. The highest detected result between the initial and reanalysis was reported for each soil sample.

The hexavalent chromium soil results in this SDG were qualified as estimated due to field duplicate precision.

Reported results less than the reporting limit, but greater than or equal to the method detection limit are approximate values and have been qualified as estimated.

ATTACHMENTS

Attachment A: Target Analyte Summary Hitlist(s)

Attachment B: Data Validation Report Form

Attachment A

Target Analyte Summary Hitlist(s)

Soil Target Analyte Summary Hit List (Hexavalent Chromium)

Site Name Site 135 South Pit Bottom
Sampling Date August 26, 2016
Lab Name/ID SGS/Accutest, Dayton, NJ
SDG No JC26570 and JC26570R
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID 135-FB20160826

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-CC30A-SW-E-8.4-8.9	JC26570-2	CHROMIUM (HEXAVALENT)	U	2.3	2.3	0.47	Qualify	1,2
135-CC30A-SW-E-4.4-4.9	JC26570-5R	CHROMIUM (HEXAVALENT)	U	0.77	0.77	0.46	Qualify	1,2
135-CC30A-SW-E-6.4-6.9	JC26570-4R	CHROMIUM (HEXAVALENT)	U	2.1	2.1	0.47	Qualify	1,2
135-CC30A-SW-E-8.4-8.9X	JC26570-3R	CHROMIUM (HEXAVALENT)	U	1.4	1.4	0.50	Qualify	1,2

Note: A “U” under Method Blank column indicates a nondetect result.
A “U” under the Laboratory Sample Result and Validation Sample Result columns indicates a nondetect result at the RL.

NJDEP Laboratory Footnote

1. The sample result was qualified because the MS recoveries were outside the MS QC criteria.

2. The sample result was estimated because the FD RPD was outside the FD RPD QC criteria.

Attachment B

Data Validation Report Form

Client Name: PPG Industries	**Project Number:** 60482955.GA.RA.OSS.2016
Site Location: Site 135 South Pit Bottom, Jersey City, NJ	**Project Manager:** Scott Mikaelian
Laboratory: SGS/Accutest, Dayton, NJ	**Type of Validation:** Full
Laboratory Job No: JC26570 and JC26570R	**Date Checked:** 09/06/2016
Validator: Sharon McKechnie	**Peer:** Mary Kozik

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X			
Field I.D. included?	X			
Laboratory I.D. included?	X			
Did data package sample IDs match sample IDs on COC?	X			
Did electronic data deliverable (EDD) sample IDs match COC sample IDs?	X			
Did data package sample IDs match electronic data deliverable (EDD) sample IDs?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6ºC?	X			
Signed COCs included?	X			
Date of sample collection included?	X			Date of collection for sample 135-CC30A-SW-E-8.4-8.9X incorrect. See memo.
Date of sample digestion included?	X			
Holding time to digestion met criteria? (Soils -30 days from collection to digestion.)	X			
Date of analysis included?	X			
Holding time to analysis met criteria? (Soils -168 hours from digestion to analysis; Aqueous - 24 hours from collection to analysis.	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			
Definitions: MDL - Method Detection Limit; %R - Percent Recovery; RL - Reporting Limit; RPD - Relative Percent Difference; RSD - Relative Standard Deviation :Corr - Correlation Coefficient.				

ITEM	YES	NO	N/A	COMMENTS
Initial calibration documentation included in lab package?	X			
1) Blank plus 4 standards (7196A) or blank plus 3 standards (7199)	X			
2) Correlation coefficient of >0.995 (7196A) or >0.999 (7199)	X			
3) Calibrate daily or each time instrument is set up.	X			
Calibration Check Standard (CCS) for 7196A and Quality Control Sample (QCS) for 7199 Included in Lab Package?	X			
1) %R criteria met? (90 - 110%)	X			
2) Correct frequency of one per every 10 samples	X			
3) CCS and QCS from independent source and at mid- level of calibration curve	X			
Calibration Blanks	X			
1) Analyzed prior to initial calibration standards and after each CCS/QCS?	X			
2) Absolute value should not exceed MDL.	X			
Method Blank, Field Blanks and/or Equipment Blanks Included in Lab Package?	X			
1) Method blank analyzed with each preparation batch?	X			
2) Absolute value should not exceed MDL.	X			
Eh and pH Data	X			
1) Eh and pH data was included and plotted for all samples?	X			
Soluble Matrix Spike Data Included in Lab Package?	X			JC26570-5/5R
1) Soluble Matrix %R criteria met? (75-125%R).		X		See table
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?		X		Initial spiked at 45.6 mg/kg and rerun spiked at 46 mg/kg. The data was not affected.
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Insoluble Matrix Spike Data Included in Lab Package?	X			JC26570-5/5R
1) Insoluble Matrix %R criteria met? (75-125%R).		X		See table
2) Was the spike concentration around 400 to 800 mg/Kg?		X		Initial spiked at 1330 mg/kg and rerun spiked at 821 mg/kg. The data was not affected.
Post Digestion Spike	X			
1) Post Digestion Spike %R criteria met? (85-115%R).	X			See Table.
2) Was the spike concentration 40 mg/Kg or twice the	X			

ITEM	YES	NO	N/A	COMMENTS
sample concentration?				
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Sample Duplicate Data Included in Lab Package?	X			JC26570-5/5R
1) RPD criteria met? (RPD < 20%) if both results are ≥4x RL or control limit of± RL if both results are <4xRL.	X			See Table
2) Was a sample duplicate analyzed at the frequency of 1 per batch or 20 samples?	X			
Was a Laboratory Control Sample (LCS) Included in Lab Package?	X			
1) %R criteria met? (80-120%R).	X			
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples?	X			
Were any Field Duplicate samples submitted with this SDG?	X			JC26570-2 and JC26570-3R
1) RPD criteria met? (RPD < 20%) if both results are ≥4x RL or control limit of± RL if both results are <4xRL.		X		RPD 48.6%, estimate. See Table
Were all sample quantitation and reporting requirements met?	X			
1) Were all solid samples reported with percent solids > 50%?	X			
2) Were any samples analyzed or reported with dilutions?		X		No dilutions
Miscellaneous Items	X			
1) For soils by 7196A, was the pH within a range of 7.0-8.0?	X			
2) For soils by 7199, was the pH within a range of 9.0-9.5?			X	
3) For aqueous by 7196A, was the pH with a range of 1.5-2.5?	X			
4) For soils (3060A), was the digestion temperature 90-95C for at least 60 minutes?	X			
5) For 7199, was each sample injected twice and was the RPD ≤20?			X	

Matrix Spikes

Sample ID	Lab ID	Analyte	Matrix Spike	% Recovery	Lower Limit	Upper Limit	PDS%	PDS Limits
135-CC30A-SW-E-4.4-4.9	JC26570-5	CHROMIUM (HEXAVALENT)	Soluble	1.1	75	125	90.4	85-115
135-CC30A-SW-E-4.4-4.9	JC26570-5	CHROMIUM (HEXAVALENT)	Insoluble	65.8	75	125		
135-CC30A-SW-E-4.4-4.9	JC26570-5R	CHROMIUM (HEXAVALENT)	Soluble	0	75	125	85.5	85-115
135-CC30A-SW-E-4.4-4.9	JC26570-5R	CHROMIUM (HEXAVALENT)	Insoluble	76.2	75	125		

Lab Duplicates

Sample ID	Lab ID	Analyte	Sample Result	Duplicate Result	QL	Units	RPD (%)	Action
135-CC30A-SW-E-4.4-4.9	JC26570-5	CHROMIUM (HEXAVALENT)	0.40B	0.35	0.46	mg/kg	13.3	Both <4X RL, Absolute Difference 0.05 mg/kg<RL Accept
135-CC30A-SW-E-4.4-4.9	JC26570-5R	CHROMIUM (HEXAVALENT)	0.77	0.63	0.46	mg/kg	20	Both <4X RL, Absolute Difference 0.14 mg/kg<RL Accept

Field Duplicates

Sample ID	Duplicate ID	Analyte	Sample Result	Duplicate Result	QL	Units	RPD (%)	Action
135-CC30A-SW-E-8.4-8.9	135-CC30A-SW-E-8.4-8.9X	Chromium (Hexavalent)	2.3	1.4	0.47	mg/kg	48.6	>35%, Estimate (J)

Percent Solids

Sample ID	Percent Solids (%)	Status
135-CC30A-SW-E-8.4-8.9	85.7	ok @50%
135-CC30A-SW-E-8.4-8.9X	79.9	ok @50%
135-CC30A-SW-E-6.4-6.9	85.1	ok @50%
135-CC30A-SW-E-4.4-4.9	87.3	ok @50%

SDG#: JC26570R/ Method 7196	x - concentration	y - response
Batch: GN51282		
Cr+6 ICAL 8/30/16	0	0
Soil	0.01	0.008
(p. 62 of data pkg)	0.05	0.04
	0.1	0.079
	0.3	0.245
	0.5	0.411
	0.8	0.639
	1	0.817

				(p. 62 of data pkg)
AECOM Calculated Offset	-0.0002	OK	Reported Offset	-0.0002
AECOM Slope	0.8119	OK	Reported Slope	0.8119
AECOM Calculated r	0.99988	OK	Reported r	0.99988

LCS calculation	**GP99838-B1**	**P.20,62**		
Background Absorbance	0			
Total absorbance	0.701			
Total absorbance - background	0.701			
Instrument Concentration	0.864			
Sample weight (mg/kg)	0.0025			
Final Volume (L)	0.1			
Dilution Factor	1			
AECOM Calculated LCS Result (mg/Kg)	34.5	OK	Reported Result (mg/Kg)	34.5

%R = Found/True*100	**GP99838-B1**	**P.20,62**		
True Value (mg/kg)	40			
AECOM Calculated %R	86.4	OK , rounding	Reported %R	86.3

MS calculation	**GP99838-S1**	**P.22,62**	**JC26570-5R**	
Background reading	0.012			
Total absorbance	0.025			
Total absorbance - background	0.013			
Instrument Concentration	0.0163			
Sample weight (mg/kg)	0.00249			
Final Volume (L)	0.1			
Percent solids	0.873			
Dilution Factor	1			
AECOM Calculated MS Result (mg/Kg)	0.75	OK	Reported Result (mg/Kg)	0.75

%R = Found/True*100	**GP99838-S1**	**P.22,62**	**JC26570-5R**	
True Value (mg/kg)	46			
Native concentration (mg/Kg)	0.77			
AECOM%R	-0.04	OK	Reported %R	0

Percent Solids	**JC26570-5R**	**P.27**	**135-CC30A-SW-E-4.4-4.9**	
Empty dish weight=	23.03			
Wet weight=	32.81			
Dry weight=	31.57			
AECOM%solids =	87.3	OK	reported %solids=	87.3

Reporting Limit	JC26570-5R	P.11,62	135-CC30A-SW-E-4.4-4.9	
Low Standard	0.01			
Initial weight (mg/kg)	0.0025			
Final volume (L)	0.1			
Percent solids	0.873			
Dilution Factor	1			
Reporting Limit	0.46	OK	Reported RL (mg/Kg)=	0.46

Sample Calculations

	JC26570-5R	P.11,62	135-CC30A-SW-E-4.4-4.9	
Background reading	0.019			
Total absorbance	0.032			
Total absorbance - background	0.013			
Instrument Response	0.016			
Sample weight (mg/kg)	0.00241			
Final Volume (L)	0.1			
Percent solids	0.873			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.77	OK	Reported Result (mg/Kg)	0.77

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Chelmsford, MA 01824

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Data Validation Report

Project:	Site 135 South Pit Bottom	
Laboratory:	SGS Accutest, Dayton, NJ	
Laboratory Job No.:	JC29231 and JC29231R	
Analysis/Method:	Hexavalent Chromium SW846 3060A/7196A	
Validation Level:	Full	
Site Location/Address:	70 Carteret Avenue, Jersey City, NJ	
AECOM Project No:	60482955.GA.RA.OSS.2016	
Prepared by:	Dawn Brule /AECOM	Completed on: 11/16/2016
Reviewed by:	Sharon McKechnie/AECOM	File Name: JC29231_R_2016-11-16_DV Report-F

Introduction

The data were reviewed in accordance with the FSP-QAPP and the following NJDEP validation Standard Operating Procedure (SOP):

- NJDEP Office of Data Quality SOP 5.A.10, Rev 3 (September 2009), SOP for Analytical Data Validation of Hexavalent Chromium - for USEPA SW-846 Method 3060A, and USEPA SW-846 Method 7196A;

The results of quality control data analyzed with site samples were used to assess the overall reliability of the data. The following qualifiers were used to identify data quality issues:

U: Indicates the analyte was not detected in the sample above the sample reporting limit.

J: Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

UJ: Indicates the analyte was not detected above the reporting limit and the reporting limit was approximate.

UB: The analyte concentration is less than or equal to three (3) times the concentration in the associated method/prep blank. The presence of the analyte in the sample is negated (UB) due to laboratory contamination.

JB: The analyte concentration is greater than three (3) times, but less than or equal to ten (10) times the concentration in the associated method/prep blank. The presence of that analyte in the sample is considered "real". The concentration is quantitatively qualified (JB) due to method blank contamination.

R: The sample result was rejected due to serious deficiencies; the presence or absence of the analyte could not be confirmed.

RA: The sample result was rejected but is still considered usable.

Sample Information

The samples listed below were collected by AECOM on October 7, 2016 as part of the Site 135 South Pit Bottom sampling at 70 Carteret Avenue, Jersey City, NJ. Only the samples and parameter listed below were validated.

Field ID	Laboratory ID	Matrix	Fraction
135-DD28A-SW-E-10.2-10.7	JC29231-5/5R	Soil	Hexavalent Chromium
135-DD28A-SW-E-10.2-10.7X (Field Duplicate of 135-DD28A-SW-E-10.2-10.7)	JC29231-11/11R	Soil	Hexavalent Chromium
135-DD28A-SW-E-12.2-12.7	JC29231-4/4R	Soil	Hexavalent Chromium
135-DD28A-SW-E-4.2-4.7	JC29231-8/8R	Soil	Hexavalent Chromium
135-DD28A-SW-E-6.2-6.7	JC29231-7/7R	Soil	Hexavalent Chromium
135-DD28A-SW-E-8.2-8.7	JC29231-6/6R	Soil	Hexavalent Chromium
135-DD28A-SW-N-12.2-12.7	JC29231-3/3R	Soil	Hexavalent Chromium
135-DD28A-SW-S-12.2-12.7	JC29231-2/2R	Soil	Hexavalent Chromium
135-DD29A-SW-E-6.5-7.0	JC29231-10/10R	Soil	Hexavalent Chromium
135-DD29A-SW-E-8.5-9.0	JC29231-9/9R	Soil	Hexavalent Chromium
135-FB20161007 (Equipment Blank)	JC29231-1	Aqueous	Hexavalent Chromium

The samples were collected following the procedures detailed in the Work Order for Garfield Avenue Remedial Action (GARA) at 70 Carteret Avenue, Jersey City, NJ and the Field Sampling Plan/Quality Assurance Project Plan for Non-Residential and Residential Chromium Sites Hudson County, New Jersey (December 2011).

General Comments

The data package was complete. Quality control (QC) issues identified during validation are discussed below. Refer to the Target Analyte Summary Hitlist(s) in Attachment A for a listing of all detected results, qualified results, and associated qualifications, where applicable. The nonconformances for each section discussed below are presented in Attachment B.

Sample Preservation

The sample cooler temperature measured upon sample receipt at the laboratory was 0.5°C, which was below the QC criteria of 2-6°C. No qualifications were applied for this minor nonconformance.

MS Results

Sample 135-DD28A-SW-E-10.2-10.7 was selected for the soil matrix spike analysis and used for supporting data quality recommendations. The soluble and insoluble matrix spike (MS) recoveries from the initial batch were 37.1% and 86.4%, respectively. The soluble MS recovery did not meet quality control (QC) criteria of 75-125%R. The post digestion spike (PDS) recovery was 52%, which did not meet the PDS criteria of 85-115%.

Based on poor MS recoveries, less than 75%R, the MS and associated samples were reanalyzed using Method 7196. The soluble and insoluble matrix spike recoveries from the re-analysis were 40.3% and 92%, respectively. The soluble MS recovery did not meet the QC criteria of 75-125%R. The post spike result for the re-analysis batch was recovered at 37%, which did not meet the PDS criteria of 85-115%.

Since the soluble MS recoveries were outside the acceptable QC limit of 75-125%, additional parameters were analyzed to determine if possible matrix interferences could be the cause for the poor matrix spike recoveries. All the soil samples were tested for pH and oxidation reduction potential (ORP) and plotted on an Eh/pH phase diagram chart. From this chart, the source sample for the matrix spike analysis was plotted below the phase change line, indicating reducing potential within the sample matrix, incapable of supporting hexavalent chromium. Analyses for ferrous iron, sulfide screen, and total organic carbon (TOC) were performed on the MS source sample to confirm the oxidizing/reducing potential within the sample matrix. The sulfide screen was reported as nondetect, indicating no reducing agents within the sample matrix; however, the ferrous iron (0.62%) and the TOC results (16,300 mg/Kg) were positive, indicating potential reducing agents within the sample matrix.

Since the soluble MS recoveries from both the initial and reanalysis did not meet the MS QC requirements, but at least one MS recovery was greater than 50%, the highest detected hexavalent chromium result or the nondetect hexavalent chromium result with the lowest reporting limit (RL) was reported for each soil sample. The reported hexavalent chromium results in all the soil samples in this SDG were qualified as estimated (J/UJ) due to the poor MS and PDS recoveries.

Laboratory Duplicate Precision

Sample 135-DD28A-SW-E-10.2-10.7 was selected by the laboratory to demonstrate laboratory precision capabilities.

The relative percent difference (RPD) for hexavalent chromium exceeded the QC acceptance RPD in the reanalysis; therefore, the hexavalent chromium results in the soil samples reported from the reanalysis were qualified as estimated (J).

Field Duplicate Results

The field duplicate pair associated with the samples in this SDG was 135-DD28A-SW-E-10.2-10.7 and 135-DD28A-SW-E-10.2-10.7X.

The RPD for the reported hexavalent chromium field duplicate results exceeded the QC acceptance RPD; therefore, the hexavalent chromium results for all soil samples in this SDG were qualified as estimated (J/UJ).

Sample Results

Reported results (flagged B by the laboratory) that were less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL) are approximate values and have been qualified as estimated (J).

Data Quality and Usability

In general, these data appear to be valid and may be used for decision-making purposes. No data were rejected. Qualified results are presented in Attachments A and B.

The hexavalent chromium soil results in this SDG are usable as estimated values with the potential for low bias due to low soluble MS and PDS recoveries. The MS sample matrix appears to be reducing based on the Eh-pH plot and the presence of TOC and ferrous iron. The highest detected hexavalent chromium result or the nondetect hexavalent chromium result with the lowest reporting limit (RL) was reported for each soil sample.

Sample results qualified due to poor laboratory duplicate precision, poor field duplicate precision, and or reported between the MDL and RL are usable as estimated values with an unknown directional bias.

ATTACHMENTS

Attachment A: Target Analyte Summary Hit List(s)

Attachment B: Data Validation Report Form

Attachment A

Target Analyte Summary Hit List(s)

Soil Target Analyte Summary Hit List (Hexavalent Chromium)

Site Name Site 135 South Pit Bottom
Sampling Date October 7, 2016
Lab Name/ID SGS Accutest, Dayton, NJ
SDG No JC29231 and JC29231R
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID 135-FB20161007

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-DD28A-SW-E-10.2-10.7	JC29231-5R	CHROMIUM (HEXAVALENT)	U	2.9	2.9	0.52	Qualify	1,2,4,5
135-DD28A-SW-E-10.2-10.7X	JC29231-11	CHROMIUM (HEXAVALENT)	U	2.3	2.3	0.51	Qualify	1,2,5
135-DD28A-SW-E-12.2-12.7	JC29231-4R	CHROMIUM (HEXAVALENT)	U	0.81	0.81	0.47	Qualify	1,2,4,5
135-DD28A-SW-E-4.2-4.7	JC29231-8R	CHROMIUM (HEXAVALENT)	U	2.3	2.3	0.44	Qualify	1,2,4,5
135-DD28A-SW-E-6.2-6.7	JC29231-7	CHROMIUM (HEXAVALENT)	U	0.43B	0.43	0.46	Qualify	1,2,3,5
135-DD28A-SW-E-8.2-8.7	JC29231-6R	CHROMIUM (HEXAVALENT)	U	0.36B	0.36	0.48	Qualify	1,2,3,4,5
135-DD28A-SW-N-12.2-12.7	JC29231-3	CHROMIUM (HEXAVALENT)	U	U	U	0.62	Qualify	1,2,5
135-DD28A-SW-S-12.2-12.7	JC29231-2	CHROMIUM (HEXAVALENT)	U	0.59	0.59	0.44	Qualify	1,2,5
135-DD29A-SW-E-6.5-7.0	JC29231-10R	CHROMIUM (HEXAVALENT)	U	0.49B	0.49	0.50	Qualify	1,2,3,4,5
135-DD29A-SW-E-8.5-9.0	JC29231-9	CHROMIUM (HEXAVALENT)	U	0.97	0.97	0.49	Qualify	1,2,5

Note: A “U” under Method Blank column indicates a nondetect result.
A “U” under the Laboratory Sample Result and Validation Sample Result columns indicates a nondetect result at the RL.

NJDEP Laboratory Footnote

1. The reported value was qualified (J/UJ) because the MS recovery or recoveries were less than 75%, but greater than 50%.

2. The reported value or nondetect result was qualified (J/UJ) because the PDS recovery was less than 85 percent.

3. The reported result was greater than the MDL but less than the RL and qualified (J) as estimated by the laboratory.

4. In the Duplicate Sample Analysis, Hexavalent Chromium fell outside the control limits of < 20 percent for sample results > 4xRL or + RL for sample results < 4xRL. Therefore, the result was qualified (J).

5. In the Field Duplicate Sample Analysis, Hexavalent Chromium fell outside the control limits of < 20 percent for sample results > 4xRL or + RL for sample results < 4xRL. Therefore, the result was qualified (J).

Attachment B

Data Validation Report Form

Client Name: PPG Industries	**Project Number:** 60482955.GA.RA.OSS.2016
Site Location: Site 135 South Pit Bottom, Jersey City, NJ	**Project Manager:** Lindi Higgins
Laboratory: SGS Accutest, Dayton, NJ	**Type of Validation:** Full
Laboratory Job No: JC29231 and JC29231R	**Date Checked:** 11/9/2016
Validator: Dawn Brule	**Peer:** Sharon McKechnie

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X			
Field I.D. included?	X			
Laboratory I.D. included?	X			
Did data package sample IDs match sample IDs on COC?	X			
Did electronic data deliverable (EDD) sample IDs match COC sample IDs?	X			
Did data package sample IDs match electronic data deliverable (EDD) sample IDs?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6C?		X		0.5C; no qual needed
Signed COCs included?	X			
Date of sample collection included?	X			
Date of sample digestion included?	X			
Holding time to digestion met criteria? (Soils -30 days from collection to digestion.)	X			
Date of analysis included?	X			
Holding time to analysis met criteria? (Soils -168 hours from digestion to analysis; Aqueous - 24 hours from collection to analysis.	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			
Definitions: MDL - Method Detection Limit; %R - Percent Recovery; RL - Reporting Limit; RPD - Relative Percent Difference; RSD - Relative Standard Deviation :Corr - Correlation Coefficient.				

ITEM	YES	NO	N/A	COMMENTS
Initial calibration documentation included in lab package?	X			
1) Blank plus 4 standards (7196A) or blank plus 3 standards (7199)	X			
2) Correlation coefficient of =0.995 (7196A) or =0.999 (7199)	X			
3) Calibrate daily or each time instrument is set up.	X			
Calibration Check Standard (CCS) for 7196A and Quality Control Sample (QCS) for 7199 Included in Lab Package?	X			
1) %R criteria met? (90 - 110%)	X			
2) Correct frequency of one per every 10 samples	X			
3) CCS and QCS from independent source and at mid-level of calibration curve	X			
Calibration Blanks	X			
1) Analyzed prior to initial calibration standards and after each CCS/QCS?	X			
2) Absolute value should not exceed MDL.	X			
Method Blank, Field Blanks and/or Equipment Blanks Included in Lab Package?	X			
1) Method blank analyzed with each preparation batch?	X			
2) Absolute value should not exceed MDL.	X			
Eh and pH Data	X			
1) Eh and pH data was included and plotted for all samples?	X			
Soluble Matrix Spike Data Included in Lab Package?	X			
1) Soluble Matrix %R criteria met? (75-125%R).		X		See table below.
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?		X		I= 50.4mg/kg and R= 54.2mg/kg; no impact to data.
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Insoluble Matrix Spike Data Included in Lab Package?	X			
1) Insoluble Matrix %R criteria met? (75-125%R).	X			
2) Was the spike concentration around 400 to 800 mg/Kg?		X		I= 1280mg/kg and R= 1060mg/kg; no impact to data.
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			

ITEM	YES	NO	N/A	COMMENTS
Post Digestion Spike	X			
1) Post Digestion Spike %R criteria met? (85-115%R).		X		See table below.
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?	X			
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Sample Duplicate Data Included in Lab Package?	X			
1) RPD criteria met? (RPD $\leq$20%) if both results are >4x RL or absolute difference $\leq$RL if either or both results are <4xRL.		X		See table below.
2) Was a sample duplicate analyzed at the frequency of 1 per batch or 20 samples?	X			
Was a Laboratory Control Sample (LCS) Included in Lab Package?	X			
1) %R criteria met? (80-120%R).	X			
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples?	X			
Were any Field Duplicate samples submitted with this SDG?	X			
1) RPD criteria met? (RPD $\leq$20%) if both results are >4x RL or absolute difference $\leq$RL if either or both results are <4xRL.		X		See table below.
Were all sample quantitation and reporting requirements met?	X			
1) Were all solid samples reported with percent solids > 50%?	X			
2) Were any samples analyzed or reported with dilutions?		X		
Miscellaneous Items				
1) For soils by 7196A, was the pH within a range of 7.0-8.0?	X			
2) For soils by 7199, was the pH within a range of 9.0-9.5?			X	
3) For aqueous by 7196A, was the pH with a range of 1.5-2.5?	X			
4) For soils (3060A), was the digestion temperature 90-95C for at least 60 minutes?	X			
5) For 7199, was each sample injected twice and was the RPD <20?			X	

Matrix Spikes

Sample ID	Analyte	Matrix Spike	% Recovery	Lower Limit	Upper Limit	PDS %	PDS Limit %
135-DD28A-SW-E-10.2-10.7	CHROMIUM (HEXAVALENT)	Soluble	37.1	75	125	52; 36.7 pH adj	85-115
135-DD28A-SW-E-10.2-10.7	CHROMIUM (HEXAVALENT)	Insoluble	86.4	75	125		
135-DD28A-SW-E-10.2-10.7	CHROMIUM (HEXAVALENT)	Soluble	40.3	75	125	37; 57 pH adj	85-115
135-DD28A-SW-E-10.2-10.7	CHROMIUM (HEXAVALENT)	Insoluble	92	75	125		

Lab Duplicates

Sample ID	Lab ID	Analyte	Sample Result	Duplicate Result	QL	Units	RPD
135-DD28A-SW-E-10.2-10.7	JC29231-5R	CHROMIUM (HEXAVALENT)	2.9	1.6	0.52	mg/kg	57.8

Field Duplicates

Sample ID	Duplicate ID	Analyte	Sample Result	Duplicate Result	QL	Units	RPD
135-DD28A-SW-E-10.2-10.7	135-DD28A-SW-E-10.2-10.7X	CHROMIUM (HEXAVALENT)	2.9	1.4	0.52	mg/kg	69.8

SDG#: JC29231/ Method 7196	x - concentration	y - response
Batch: GN53222		
Cr+6 ICAL 10/10/16	0	0
Soil	0.01	0.008
(p. 58 of data pkg)	0.05	0.043
	0.1	0.075
	0.3	0.247
	0.5	0.400
	0.8	0.645
	1	0.815

				(p. 58 of data pkg)
AECOM Calculated Offset	-0.0009	OK	Reported Offset	-0.0009
AECOM Slope	0.8117	OK	Reported Slope	0.8117
AECOM Calculated r	0.99992	OK	Reported r	0.99992

LCS calculation	**GP646-B1**	**P. 35,58**		
Background Absorbance	0			
Total absorbance	0.716			
Total absorbance - background	0.716			
Instrument Concentration	0.883			
Sample weight (mg/kg)	0.0025			
Final Volume (L)	0.1			
Dilution Factor	1			
AECOM Calculated LCS Result (mg/Kg)	35.3	OK	Reported Result (mg/Kg)	35.3

%R = Found/True*100	**GP646-B1**	**P. 35,58**		
True Value (mg/kg)	40			
AECOM Calculated %R	88.3	OK	Reported %R	88.3

MS calculation	**GP646-S1**	**P. 37,38,58**	**JC29231-5**	
Background reading	0			
Total absorbance	0.338			
Total absorbance - background	0.338			
Instrument Concentration	0.4175			
Sample weight (mg/kg)	0.0026			
Final Volume (L)	0.1			
Percent solids	0.763			
Dilution Factor	1			
AECOM Calculated MS Result (mg/Kg)	21.0	OK	Reported Result (mg/Kg)	21.0

%R = Found/True*100	**GP646-S1**	**P. 37,38,58**	**JC29231-5**	
True Value (mg/kg)	50.4			
Native concentration (mg/Kg)	2.3			
AECOM%R	37	OK	Reported %R	37

Percent Solids	**JC29231-5**	**P. 38**	**135-DD28A-SW-E-10.2-10.7**	
Empty dish weight=	24.78			
Wet weight=	32.57			
Dry weight=	30.72			
AECOM %solids =	76.3	OK	reported %solids=	76.3

Reporting Limit	**JC29231-5**	**P. 10,38,58**	**135-DD28A-SW-E-10.2-10.7**	
Low Standard	0.01			
Initial weight (mg/kg)	0.00260			
Final volume (L)	0.1			
Percent solids	0.763			
Dilution Factor	1			
Reporting Limit	0.5	OK	Reported RL (mg/Kg)=	0.5

Sample Calculations	**JC29231-5**	**P. 10,38,58**	**135-DD28A-SW-E-10.2-10.7**	
Background reading	0.014			
Total absorbance	0.05			
Total absorbance - background	0.036			
Instrument Response	0.045			
Sample weight (mg/kg)	0.0026			
Final Volume (L)	0.1			
Percent solids	0.763			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	2.3	OK	Reported Result (mg/Kg)	2.3

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Chelmsford, MA 01824

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Data Validation Report

Project:	Site 135 South Pit Bottom
Laboratory:	SGS/Accutest, Dayton, NJ
Laboratory Job No.:	JC29231A
Analysis/Method:	Volatile Organic Compounds (VOCs) by GCMS/SW-846 8260C Semivolatile Organic Compounds (SVOCs) by GCMS/SW-846 8270D TAL Metals SW-846 3010A/3050B/6010C/7470A/7471B
Validation Level:	Limited (All Parameters Except Hexavalent Chromium)
Site Location/Address:	PPG Site 135 - Garfield Avenue, Jersey City, NJ
AECOM Project No:	60482955.GA.RA.OSS.2016
Prepared by: Charlene Livingston Flint /AECOM	Completed on: 11/16/2016
Reviewed by: Sharon McKechnie /AECOM	File Name : JC29231A_2016-11-16_F

Introduction

The data were reviewed in accordance with the FSP-QAPP and the following NJDEP and /or Region 2 validation Standard Operating Procedure(s) (SOP):

- NJDEP Office of Data Quality SOP 5.A.16, Rev 1 (May 2002), Quality Assurance Data Validation of Analytical Deliverables for Inorganics (based on USEPA SW-846 Methods);
- ICP-AES Data Validation, SOP No. HW-3a Revision 0 (July 2015);
- Mercury and Cyanide Data Validation, SOP No. HW-3c Revision 0 (July 2015);
- Volatile Organic Compounds By Gas Chromatography/Mass Spectrometry SW-846 Method 8260B, SOP No. HW-33A, Revision 0;
- Semivolatile Data Validation SOP No. HW-35A Revision 0 (June 2015).

The results of quality control data analyzed with site samples were used to assess the overall reliability of the data. The following qualifiers were used to identify data quality issues:

U: Indicates the analyte was not detected in the sample above the sample reporting limit.

J: Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

UJ: Indicates the analyte was not detected above the reporting limit and the reporting limit was approximate.

UB: The analyte concentration is less than or equal to three (3) times the concentration in the associated method/prep blank. The presence of the analyte in the sample is negated (UB) due to laboratory contamination.

JB: The analyte concentration is greater than three (3) times, but less than or equal to ten (10) times the concentration in the associated method/prep blank. The presence of that

analyte in the sample is considered "real". The concentration is quantitatively qualified (JB) due to method blank contamination.

R: The sample result was rejected due to serious deficiencies; the presence or absence of the analyte could not be confirmed.

RA: The sample result was rejected due to NJ specific data validation QC requirements; however, the result is usable for project objectives. Refer to the Data Quality and Usability section in this data validation report for further discussion.

Sample Information

The samples listed below were collected by AECOM on October 7, 2016 as part of the Site 135 South Pit Bottom sampling at PPG Site 135 - Garfield Avenue, Jersey City, New Jersey. Only the samples and parameter listed below were validated.

Field ID	Laboratory ID	Matrix	Fraction
135-FB20161007 (Equipment Blank)	JC29231-1A	Aqueous	Mercury, Metals, SVOCs and VOCs
135-DD29A-SW-E-8.5-9.0	JC29231-9A	Soil	Mercury, Metals, SVOCs and VOCs

The samples were collected following the procedures detailed in the Work Order for Garfield Avenue Remedial Action (GARA) at Garfield Avenue, Jersey City, NJ and the Field Sampling Plan/Quality Assurance Project Plan for Non-Residential and Residential Chromium Sites Hudson County, New Jersey (December 2011).

General Comments

The data package was complete. Quality control (QC) issues identified during validation are discussed below. Refer to the Target Analyte Summary Hitlist(s) in Attachment A for a listing of all detected results, qualified results, and associated qualifications, where applicable. The nonconformances for each section discussed below are presented in Attachment B.

TAL Metals

Laboratory Blanks/Equipment Blanks

Aluminum, calcium and zinc were detected in the aqueous method blank (MB) MP96422, associated with the aqueous equipment blank (EB) sample 135-FB201601007 (JC29321-1A) in this data set. Aluminum and calcium were not reported in the associated equipment blank; therefore, no qualifications were made for these analytes. Zinc was detected in the EB, 135-FB201601007, at a concentration less than three times the amount in the method Blank (MB); therefore, zinc was negated (UB) at the reporting limit (RL).

Iron was detected in the soil MB, MP96381 and was detected in the associated soil sample, 135-DD29A-SW-E-8.5-9.0 (JC29231-9A), at a concentration greater than ten times the amount in the MB; therefore, no qualification was necessary.

Refer to the Target Analyte Summary Hit List(s) in Attachment A for a listing of all results qualified on the basis of aqueous MB contamination. Refer to the nonconformance tables in Appendix B for a listing of MB and EB results and associated qualification actions.

Sample Results

Reported results (flagged B by the laboratory) that were less than the reporting limit (RL) but greater than or equal to the method detection limit (MDL) are approximate values and have been qualified as estimated (J).

VOCs

Sample Results

Reported results (flagged J by the laboratory) that were less than the RL but greater than or equal to the MDL are approximate values and have been qualified as estimated (J).

SVOCs

Laboratory Blanks/Equipment Blanks

The aqueous method blank, OP97599-MB1, reported bis(2ethylhexyl)phthalate at a concentration greater than the RL. The associated equipment blank, 135-FB20161007 (JC29231-1A), was non-detect; therefore, no qualifications were necessary.

Sample Results

Reported results (flagged J by the laboratory) that were less than the RL but greater than or equal to the MDL are approximate values and have been qualified as estimated (J).

Data Quality and Usability

The following issues were noted for this sample set:

- Zinc was negated at the RL in sample 135-FB201601007 due to method blank contamination.
- Sample results reported between the MDL and RL were estimated with an unknown direction of bias.

ATTACHMENTS

Attachment A: Target Analyte Summary Hitlist(s)

Attachment B: Data Validation Report Form

Attachment A

Target Analyte Summary Hitlist(s)

Soil Target Analyte Summary Hit List (TAL Metals)

Site Name Site 135 South Pit Bottom
Sampling Date October 7, 2016
Lab Name/ID SGS/Accutest, Dayton, NJ
SDG No JC29231A
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID 135-FB20161007

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-DD29A-SW-E-8.5-9.0	JC29231-9A	ALUMINUM	U	8100	8100	62		
135-DD29A-SW-E-8.5-9.0	JC29231-9A	ANTIMONY	U	1.2B	1.2	2.5	Qualify	1
135-DD29A-SW-E-8.5-9.0	JC29231-9A	ARSENIC	U	15.8	15.8	2.5		
135-DD29A-SW-E-8.5-9.0	JC29231-9A	BARIUM	U	227	227	25		
135-DD29A-SW-E-8.5-9.0	JC29231-9A	BERYLLIUM	U	0.57	0.57	0.25		
135-DD29A-SW-E-8.5-9.0	JC29231-9A	CADMIUM	U	0.87	0.87	0.62		
135-DD29A-SW-E-8.5-9.0	JC29231-9A	CALCIUM METAL	U	5530	5530	620		
135-DD29A-SW-E-8.5-9.0	JC29231-9A	CHROMIUM	U	29.0	29.0	1.2		
135-DD29A-SW-E-8.5-9.0	JC29231-9A	COBALT	U	7.8	7.8	6.2		
135-DD29A-SW-E-8.5-9.0	JC29231-9A	COPPER	U	457	457	3.1		
135-DD29A-SW-E-8.5-9.0	JC29231-9A	IRON	1.1	15000	15000	62		
135-DD29A-SW-E-8.5-9.0	JC29231-9A	LEAD	U	396	396	2.5		
135-DD29A-SW-E-8.5-9.0	JC29231-9A	MAGNESIUM	U	1900	1900	620		
135-DD29A-SW-E-8.5-9.0	JC29231-9A	MANGANESE	U	281	281	1.9		
135-DD29A-SW-E-8.5-9.0	JC29231-9A	NICKEL	U	26.8	26.8	5.0		
135-DD29A-SW-E-8.5-9.0	JC29231-9A	POTASSIUM	U	1280	1280	1200		
135-DD29A-SW-E-8.5-9.0	JC29231-9A	SELENIUM	U	8.6	8.6	2.5		
135-DD29A-SW-E-8.5-9.0	JC29231-9A	SILVER	U	0.40B	0.40	0.62	Qualify	1

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-DD29A-SW-E-8.5-9.0	JC29231-9A	SODIUM	U	624B	624	1200	Qualify	1
135-DD29A-SW-E-8.5-9.0	JC29231-9A	THALLIUM	U	0.71B	0.71	1.2	Qualify	1
135-DD29A-SW-E-8.5-9.0	JC29231-9A	VANADIUM	U	32.7	32.7	6.2		
135-DD29A-SW-E-8.5-9.0	JC29231-9A	ZINC	U	535	535	6.2		
135-DD29A-SW-E-8.5-9.0	JC29231-9A	MERCURY	U	1.9	1.9	0.19		

Note: A “U” under Method Blank column indicates a nondetect result.

NJDEP Laboratory Footnote

1. The reported result was greater than the MDL but less than the RL and therefore was estimated.

Aqueous Target Analyte Summary Hit List (TAL Metals)

Site Name Site 135 South Pit Bottom
Sampling Date October 7, 2016
Lab Name/ID SGS/Accutest, Dayton, NJ
SDG No JC29231A
Sample Matrix Aqueous
Trip Blank ID NA
Field Blank ID 135-FB20161007

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/l)	Laboratory Sample Result (ug/l)	Validation Sample Result (ug/l)	RL (ug/l)	Quality Assurance Decision	NJDEP Validation Footnote
135-FB20161007	JC29231-1A	ZINC	1.8	1.9B	UB	20	Negate	1

Note: A “U” under Method Blank column indicates a nondetect result.
A “U” under the Laboratory Sample Result and Validation Sample Result columns indicates a nondetect result at the RL.

NJDEP Laboratory Footnote

1. The value reported is less than or equal to 3x the value in the method blank. It is the policy of NJDEP-DPFSR to negate the reported value due to probable foreign contamination unrelated to the actual sample. The end-user, however, is alerted that a reportable quantity of the analyte was detected.

Soil Target Analyte Summary Hit List (VOCs)

Site Name Site 135 South Pit Bottom
Sampling Date October 7, 2016
Lab Name/ID SGS/Accutest, Dayton, NJ
SDG No JC29231A
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID 135-FB20161007

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-DD29A-SW-E-8.5-9.0	JC29231-9A	ACETONE	U	23.5	23.5	13		
135-DD29A-SW-E-8.5-9.0	JC29231-9A	CARBON DISULFIDE	U	0.61J	0.61	2.7	Qualify	1
135-DD29A-SW-E-8.5-9.0	JC29231-9A	ETHYLBENZENE	U	0.35J	0.35	1.3	Qualify	1
135-DD29A-SW-E-8.5-9.0	JC29231-9A	STYRENE (MONOMER)	U	0.39J	0.39	2.7	Qualify	1
135-DD29A-SW-E-8.5-9.0	JC29231-9A	TOLUENE	U	0.28J	0.28	1.3	Qualify	1

Note: A “U” under Method Blank column indicates a nondetect result.
A “U” under the Laboratory Sample Result and Validation Sample Result columns indicates a nondetect result at the RL.

NJDEP Laboratory Footnote

1. The reported result was greater than the MDL but less than the RL and therefore was estimated.

Soil Target Analyte Summary Hit List (SVOCs)

Site Name Site 135 South Pit Bottom
Sampling Date October 7, 2016
Lab Name/ID SGS/Accutest, Dayton, NJ
SDG No JC29231A
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID 135-FB20161007

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-DD29A-SW-E-8.5-9.0	JC29231-9A	1-1'-BIPHENYL	U	113	113	81		
135-DD29A-SW-E-8.5-9.0	JC29231-9A	2-METHYLNAPHTHALENE	U	500	500	81		
135-DD29A-SW-E-8.5-9.0	JC29231-9A	3+4-METHYLPHENOL	U	339	339	81		
135-DD29A-SW-E-8.5-9.0	JC29231-9A	ACENAPHTHENE	U	190	190	41		
135-DD29A-SW-E-8.5-9.0	JC29231-9A	ACENAPHTHYLENE	U	78.9	78.9	41		
135-DD29A-SW-E-8.5-9.0	JC29231-9A	ACETOPHENONE	U	76.6J	76.6	200	Qualify	1
135-DD29A-SW-E-8.5-9.0	JC29231-9A	ANTHRACENE	U	216	216	41		
135-DD29A-SW-E-8.5-9.0	JC29231-9A	BENZALDEHYDE	U	518	518	200		
135-DD29A-SW-E-8.5-9.0	JC29231-9A	BENZO(A)ANTHRACENE	U	248	248	41		
135-DD29A-SW-E-8.5-9.0	JC29231-9A	BENZO(A)PYRENE	U	235	235	41		
135-DD29A-SW-E-8.5-9.0	JC29231-9A	BENZO(B)FLUORANTHENE	U	383	383	41		
135-DD29A-SW-E-8.5-9.0	JC29231-9A	BENZO(G,H,I)PERYLENE	U	183	183	41		
135-DD29A-SW-E-8.5-9.0	JC29231-9A	BENZO(K)FLUORANTHENE	U	113	113	41		
135-DD29A-SW-E-8.5-9.0	JC29231-9A	BIS(2-ETHYLHEXYL)PHTHALATE	U	457	457	81		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-DD29A-SW-E-8.5-9.0	JC29231-9A	CARBAZOLE	U	46.8J	46.8	81	Qualify	1
135-DD29A-SW-E-8.5-9.0	JC29231-9A	CHRYSENE	U	363	363	41		
135-DD29A-SW-E-8.5-9.0	JC29231-9A	DIBENZO(A,H)ANTHRACENE	U	49.5	49.5	41		
135-DD29A-SW-E-8.5-9.0	JC29231-9A	DIBENZOFURAN	U	218	218	81		
135-DD29A-SW-E-8.5-9.0	JC29231-9A	FLUORANTHENE	U	626	626	41		
135-DD29A-SW-E-8.5-9.0	JC29231-9A	FLUORENE	U	227	227	41		
135-DD29A-SW-E-8.5-9.0	JC29231-9A	INDENO(1,2,3-CD)PYRENE	U	173	173	41		
135-DD29A-SW-E-8.5-9.0	JC29231-9A	NAPHTHALENE	U	644	644	41		
135-DD29A-SW-E-8.5-9.0	JC29231-9A	PHENANTHRENE	U	954	954	41		
135-DD29A-SW-E-8.5-9.0	JC29231-9A	PHENOL	U	96.2	96.2	81		
135-DD29A-SW-E-8.5-9.0	JC29231-9A	PYRENE	U	480	480	41		

Note: A “U” under Method Blank column indicates a nondetect result.

NJDEP Laboratory Footnote

1. The reported result was greater than the MDL but less than the RL and therefore was estimated.

Attachment B

Data Validation Report Form

DATA VALIDATION REPORT FORM – METALS ANALYSIS

Client Name: PPG Industries	**Project Number:** 60482955.GA.RA.OSS.2016
Site Location: Site 135 Pit Bottom Sampling, Jersey City, NJ	**Project Manager:** Scott Mikaelian
Laboratory: SGS/Accutest, Dayton, NJ	**Type of Validation:** Limited
Laboratory Job No: JC29231A	**Date Checked:** 11/16/2016
Validator: Charlene Livingston Flint	**Peer:** Sharon McKechnie

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X			
Field I.D. included?	X			
Laboratory I.D. included?	X			
Did data package sample IDs match sample IDs on COC?	X			
Did electronic data deliverable (EDD) sample IDs match COC sample IDs?	X			
Did data package sample IDs match electronic data deliverable (EDD) sample IDs?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6ºC?	X			0.5 C Below QC limits. No qualifications made.
Signed COCs included?	X			
Date of sample collection included?	X			
Date of sample digestion included?	X			
Date of analysis included?	X			
Holding time met QC criteria? (Metals -180 days from sample collection; Mercury - 28 days from sample collection. If HT exceeded by 10 days R all results.	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			
Definitions: MDL - Method Detection Limit; %R - Percent Recovery; RL - Reporting Limit; RPD - Relative Percent Difference; RSD - Relative Standard Deviation :Corr - Correlation Coefficient.				

ITEM	YES	NO	N/A	COMMENTS
Sample dilutions?	X			JC29231-9A 5x dilution for mercury , See Table
Initial calibration documentation included in lab package?			X	N/A for Limited Validation
1) Calibrate daily or each time instrument is set up.			X	
2) ICP (6010) -Blank plus 1 standard?			X	
3) Hg (7470/7471) -Blank plus 5 standards?			X	
Initial Calibration Verification Standard (ICV) for ICP (6010) and Initial Calibration Check Standard (ICCS) for Hg (7470/7471) included in lab package?			X	N/A for Limited Validation
1) Analyzed immediately after initial calibration?			X	
2) %R criteria met? (90-110%)			X	
3) Spot check ICV/ICCS results for several analytes.			X	
Continuing Calibration Verification Standard (CCV) for ICP (6010) and Calibration Check Standard (CCS) for Hg (7470/7471) included in Lab Package?			X	N/A for Limited Validation
1) Analyzed immediately after each ICV/ICC/CB and after every 10 samples?			X	
2) CCS and CCV from independent source and at mid- level of calibration curve.			X	
3) %R criteria met? (90-110%R).			X	
4) Spot check CCV/CCS results for several analytes.			X	
Low Calibration Standard (CRI) included in Lab Package?			X	N/A for Limited Validation
1) %R criteria met?			X	
Calibration Blanks			X	N/A for Limited Validation
1) Analyzed after daily calibration and after each ICV/ICC/CCV/CCS and after every 10 samples?			X	
2) Absolute value <3xIDL?			X	
Method Blank Included in Lab Package?	X			
1) Method blank analyzed with each preparation batch or every SDG, or 1/20 samples?	X			
2) Method blank analyzed 1/20 samples	X			
3) MB results nondetect?		X		See Table
4) Negative MB result reported?		X		
Field Blanks/Equipment Blanks Included in Lab Package?		X		

ITEM	YES	NO	N/A	COMMENTS
1) FB/EB result non-detect?			X	
ICP Interference Check Sample (ICS) included in Lab Package?			X	N/A for Limited Validation
1) Analyzed at beginning of analytical run?			X	
2) %R criteria met? (80-120%)			X	
3) Spot check accuracy of %Rs			X	
Matrix Spike/Matrix Spike Duplicate Data Included in Lab Package?	X			Batch QC. QC not evaluated.
1) MS/MSD %R (75-125%R) and RPD (20%) criteria met?			X	
2) Was a sample spiked at the frequency of 1/batch or 20 samples?			X	
3) Was the MS performed on a site sample?		X		
4) Was the MS performed on a FB/EB or TB?			X	
Post Digestion Spike			X	N/A for Limited Validation
1) %R criteria met? (75-125%R)			X	
2) Was the spike performed on a FB/EB or TB?			X	
3) Was a sample spiked at the frequency of 1/batch or 20 samples?			X	
Laboratory Duplicate Data Included in Lab Package?		X		
Aqueous - RPD criteria met? (20%)			X	
Soil - RPD criteria met? (35%)			X	
Was a Laboratory Control Sample (LCS) Included in Lab Package?	X			
1) LCS %R criteria met? (80-120%R).	X			
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples?	X			
Serial Dilution			X	N/A for Limited Validation
1) %D (<10%R) criteria met? -			X	
2) Was the frequency 1/batch or 20 samples?			X	
3) Was a site sample used?			X	
4) Was a FB/EB or TB used?			X	
5) Spot check accuracy of %Ds.			X	

ITEM	YES	NO	N/A	COMMENTS
Field Duplicate Data included in Lab Package?		X		
Aqueous - RPD criteria met? (20%)			X	
Soil - RPD criteria met? (35%)			X	
Percent Solids data included in Lab Package?	X			See Table
1) % Solids criteria (Reg 2 criteria) met? (>/=50%)	X			
Chromium result greater than corresponding hexavalent chromium result where applicable?	X			

Blanks

Analyte	Result	3X	10X	Actions	Associated Samples
Soil Method Blank MP96381	**(mg/kg)**	**(mg/kg)**	**(mg/kg)**		
Iron	1.1	3.3	11	OK, >10X MB	135-DD29A-SW-E-8.5-9.0 (JC29231-9A)
Aqueous Method Blank MP96422	**(ug/l)**	**(ug/l)**	**(ug/l)**		
Aluminum	34.1	102.3	341.0	OK, ND	135-FB20161007
Calcium	40.7	122.1	407.0	OK, ND	135-FB20161007
Zinc	1.8	5.4	18	<3x MB, Negate (UB)	135-FB20161007

Percent Solids

Sample ID	Percent Solids (%)	Status
135-DD29A-SW-E-8.5-9.0	81.4	ok @50%

Sample Dilutions

Sample	Lab ID	Dilution	Analyte
135-DD29A-SW-E-8.5-9.0	JC29231-9A	5	MERCURY

DATA VALIDATION REPORT FORM – VOC ANALYSIS

Client Name: PPG Industries	**Project Number:** 60482955.GA.RA.OSS.2016
Site Location: Site 135 Pit Bottom Sampling, Jersey City, NJ	**Project Manager:** Scott Mikaelian
Laboratory: SGS/Accutest, Dayton, NJ	**Type of Validation:** Limited
Laboratory Job No: JC29231A	**Date Checked:** 11/16/2016
Validator: Charlene Livingston Flint	**Peer:** Sharon McKechnie

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X			
Field I.D. included?	X			
Laboratory I.D. included?	X			
Did data package sample IDs match sample IDs on COC?	X			
Did electronic data deliverable (EDD) sample IDs match COC sample IDs?	X			
Did data package sample IDs match electronic data deliverable (EDD) sample IDs?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6ºC?	X			0.5 C Below QC limits. No qualifications made.
Signed COCs included?	X			
Date of sample collection included?	X			
Date of analysis included?	X			
Holding time to analysis met criteria? Aqueous (unpreserved) - 7 days from collection to analysis. Aqueous (preserved) - 14 days from collection to analysis. Soils - 14 days from collection to analysis.	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			

Definitions: MDL - Method Detection Limit; %R - Percent Recovery; RL - Reporting Limit; RPD - Relative Percent Difference; RSD - Relative Standard Deviation :Corr - Correlation Coefficient.

ITEM	YES	NO	N/A	COMMENTS
Sample dilutions?		X		No dilutions
Method Blank Included in Lab Package?	X			
1) Method blank analyzed with each preparation batch?	X			
2) Absolute value should not exceed RL.	X			
Trip Blanks/Field Blanks/Equipment Blanks Included in Lab Package?	X			135-FB20161007
1) TB/FB/EB results non-detect?	X			
Surrogate Data Included?	X			
1) Is %R criteria (laboratory criteria) met?	X			
Matrix Spike/Matrix Spike Duplicate Data Included in Lab Package?	X			Batch QC. QC not evaluated
1) %R and RPD (laboratory criteria) met?			X	
2) Was the spike concentration at the same concentration as the LCS?			X	
3) Was a sample spiked at the frequency of 1 per 20 samples?			X	
Laboratory Duplicate Data Included in Lab Package?	X			JC29231-9A
1) %RPD (laboratory criteria) met?	X			<4xRL, Abs Diff <RL
Was a Laboratory Control Sample (LCS) Included in Lab Package?	X			
1) LCS %R criteria met? (laboratory criteria)	X			
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples?	X			
Field Duplicate Data included in Lab Package?		X		
1) %RPD criteria (Reg 2 criteria) met?			X	
Percent Solids data included in Lab Package?	X			
1) %Solids criteria (Reg 2 criteria) met? (>/=50%)	X			See Table

Lab Duplicates

Sample ID	Lab ID	Analyte	Sample Result	Duplicate Result	QL	Units	RPD	RPD Limits %	Action
135-DD29A-SW-E-8.5-9.0	JC29231-9A	ETHYLBENZENE	0.35J	0.32J	1.3	ug/kg	9	23	None, OK
135-DD29A-SW-E-8.5-9.0	JC29231-9A	STYRENE (MONOMER)	0.39J	0.26J	2.7	ug/kg	**40**	30	SR<4xRL, Abs Diff<RL, Accept
135-DD29A-SW-E-8.5-9.0	JC29231-9A	TOLUENE	0.28J	0.37J	1.3	ug/kg	**27.7**	22	SR<4xRL, Abs Diff<RL, Accept
135-DD29A-SW-E-8.5-9.0	JC29231-9A	CARBON DISULFIDE	0.61J	0.47J	2.7	ug/kg	**25.9**	20	SR<4xRL, Abs Diff<RL, Accept

Percent Solids

Sample ID	Percent Solids (%)	Status
135-DD29A-SW-E-8.5-9.0	81.4	ok @50%

DATA VALIDATION REPORT FORM – SVOC ANALYSIS

Client Name: PPG Industries	**Project Number:** 60482955.GA.RA.OSS.2016
Site Location: Site 135 Pit Bottom Sampling, Jersey City, NJ	**Project Manager:** Scott Mikaelian
Laboratory: SGS/Accutest, Dayton, NJ	**Type of Validation:** Limited
Laboratory Job No: JC29231A	**Date Checked:** 11/16/2016
Validator: Charlene Livingston Flint	**Peer:** Sharon McKechnie

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X			
Field I.D. included?	X			
Laboratory I.D. included?	X			
Did data package sample IDs match sample IDs on COC?	X			
Did electronic data deliverable (EDD) sample IDs match COC sample IDs?	X			
Did data package sample IDs match electronic data deliverable (EDD) sample IDs?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6ºC?	X			0.5 C Below QC limits. No qualifications made.
Signed COCs included?	X			
Date of sample collection included?	X			
Date of sample extraction included?	X			
Date of analysis included?	X			
Holding time to analysis met criteria?	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			

Definitions: MDL - Method Detection Limit; %R - Percent Recovery; RL - Reporting Limit; RPD - Relative Percent Difference; RSD - Relative Standard Deviation :Corr - Correlation Coefficient.

ITEM	YES	NO	N/A	COMMENTS
Sample dilutions?		X		
Method Blank Included in Lab Package?	X			
1) Method blank analyzed with each preparation batch?	X			
2) Absolute value should not exceed RL.		X		Aq MBs reported bis(2-ethylhexyl)phthalate. EB ND. No qualifications. See Table
Trip Blanks/Field Blanks/Equipment Blanks Included in Lab Package?	X			135-FB20161007
1) TB/FB/EB results non-detect?	X			
Surrogate Data Included?	X			
1) Is %R criteria (laboratory criteria) met?	X			
Matrix Spike/Matrix Spike Duplicate Data Included in Lab Package?	X			Batch QC. QC not evaluated.
1) %R and RPD (laboratory criteria) met?			X	
2) Was the spike concentration at the same concentration as the LCS?			X	
3) Was a sample spiked at the frequency of 1 per 20 samples?			X	
Was a Laboratory Control Sample (LCS) Included in Lab Package?	X			
1) LCS %R criteria met? (laboratory criteria)	X			
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples?	X			
Field Duplicate Data included in Lab Package?		X		
1) %RPD criteria (Reg 2 criteria) met?			X	
Percent Solids data included in Lab Package?	X			
1) %Solids criteria (Reg 2 criteria) met? (>/=50%)	X			See Table

Laboratory Blanks

Blank ID	Analyte	Result	QL	Units	Associated Samples	Action
OP97599-MB1 (10/10/16)	BIS(2-ETHYLHEXYL)PHTHALATE	3.1	2.0	ug/l	135-FB20161007	None, Sample ND
OP97599-MB1 (10/11/16)	BIS(2-ETHYLHEXYL)PHTHALATE	2.3	2.0	ug/l	135-FB20161007	None, Sample ND

Percent Solids

Sample ID	Percent Solids (%)	Status
135-DD29A-SW-E-8.5-9.0	81.4	ok @50%

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Data Validation Report

Project:	Site 135 South Pit Bottom	
Laboratory:	Accutest, Dayton, NJ	
Laboratory Job No.:	JC29762 and JC29762R	
Analysis/Method:	Hexavalent Chromium SW846 3060A/7196	
Validation Level:	Full	
Site Location/Address:	70 Carteret Avenue, Jersey City, NJ	
AECOM Project No:	60482955.GA.RA.OSS.2016	
Prepared by:	Dawn Brule /AECOM	Completed on: 12/21/2016
Reviewed by:	Mary Kozik/AECOM	File Name: JC29762_R_2016-12-21_DV Report-F

Introduction

The data were reviewed in accordance with the FSP-QAPP and the following NJDEP validation Standard Operating Procedure (SOP):

- NJDEP Office of Data Quality SOP 5.A.10, Rev 3 (September 2009), SOP for Analytical Data Validation of Hexavalent Chromium - for USEPA SW-846 Method 3060A, and USEPA SW-846 Method 7196A;

The results of quality control data analyzed with site samples were used to assess the overall reliability of the data. The following qualifiers were used to identify data quality issues:

U: Indicates the analyte was not detected in the sample above the sample reporting limit.

J: Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

UJ: Indicates the analyte was not detected above the reporting limit and the reporting limit was approximate.

UB: The analyte concentration is less than or equal to three (3) times the concentration in the associated method/prep blank. The presence of the analyte in the sample is negated (UB) due to laboratory contamination.

JB: The analyte concentration is greater than three (3) times, but less than or equal to ten (10) times the concentration in the associated method/prep blank. The presence of that analyte in the sample is considered "real". The concentration is quantitatively qualified (JB) due to method blank contamination.

R: The sample result was rejected due to serious deficiencies; the presence or absence of the analyte could not be confirmed.

RA: The sample result was rejected but is still considered usable.

Sample Information

The samples listed below were collected by AECOM on October 13, 2016 as part of the Site 135 South Pit Bottom sampling at 70 Carteret Avenue, Jersey City, NJ. Only the samples and parameters listed below were validated.

Field ID	Laboratory ID	Matrix	Fraction
135-DD28A-SW-S-12.4-12.9	JC29762-2	Soil	Hexavalent Chromium
135-DD28A-SW-S-12.4-12.9	JC29762-2R	Soil	Hexavalent Chromium
135-DD29A-SW-E-4.2-4.7	JC29762-3	Soil	Hexavalent Chromium
135-DD29A-SW-E-4.2-4.7	JC29762-3R	Soil	Hexavalent Chromium
135-FB20161013 (Equipment Blank)	JC29762-1	Aqueous	Hexavalent Chromium

The samples were collected following the procedures detailed in the Work Order for Garfield Avenue Remedial Action (GARA) at 70 Carteret Avenue, Jersey City, NJ and the Field Sampling Plan/Quality Assurance Project Plan for Non-Residential and Residential Chromium Sites Hudson County, New Jersey (December 2011).

General Comments

The data package was complete. Quality control (QC) issues identified during validation are discussed below. Refer to the Target Analyte Summary Hit(s) in Attachment A for a listing of all detected results, qualified results, and associated qualifications, where applicable. The nonconformances for each section discussed below are presented in Attachment B.

MS Results

Sample 135-DD29A-SW-E-4.2-4.7 was selected for the soil matrix spike analysis and used for supporting data quality recommendations. The soluble and insoluble matrix spike (MS) recoveries from the initial batch were 28.1% and 99.3%, respectively. The soluble MS recovery did not meet quality control (QC) criteria of 75-125%R. The post digestion spike (PDS) recovery was 66% and after pH adjustment was 70%, which did not meet the PDS criteria of 85-115%.

Based on the soluble MS recovery less than 75%R, the MS and associated samples were reanalyzed using Method 7196. The soluble and insoluble matrix spike recoveries from the re-analysis were 51.1% and 94%, respectively. The soluble MS recovery did not meet the QC criteria of 75-125%R. The post spike result for the re-analysis batch was recovered at 76% and after pH adjustment was 75%, which did not meet the PDS criteria of 85-115%.

Since the soluble MS recoveries were outside the acceptable QC limit of 75-125%, additional parameters were analyzed to determine if possible matrix interferences could be the cause for the low matrix spike recoveries. All the soil samples were tested for pH and oxidation reduction potential (ORP) and plotted on an Eh/pH phase diagram chart. From this chart, the source sample for the matrix spike analysis was plotted below the phase change line, indicating reducing potential within the sample matrix, incapable of supporting hexavalent chromium. Analyses for ferrous iron, sulfide screen, and total organic carbon (TOC) were performed on the MS source sample to confirm the oxidizing/reducing potential within the sample matrix. The sulfide screen was reported as nondetect, indicating no reducing agents within the sample matrix; however, the ferrous iron (1.0%) and the TOC results (95,600 mg/Kg) were positive, indicating potential reducing agents within the sample matrix.

Since the soluble MS recoveries from both the initial and reanalysis did not meet the MS QC requirements, but at least one MS recovery was greater than 50%, the highest detected hexavalent chromium result was reported for each soil sample. The reported hexavalent chromium results in all the soil samples in this SDG were qualified as estimated (J) due to the poor MS and PDS recoveries.

Laboratory Duplicate Precision

Sample 135-DD29A-SW-E-4.2-4.7 was selected by the laboratory to demonstrate laboratory precision capabilities.

The relative percent difference for hexavalent chromium exceeded the QC acceptance RPD in both analyses; therefore, the hexavalent chromium results in the soil samples reported from both analyses were qualified as estimated (J).

Data Quality and Usability

In general, these data appear to be valid and may be used for decision-making purposes. No data were rejected. Qualified results, if applicable, are presented in Attachments A and B.

The hexavalent chromium soil results in this SDG are usable as estimated values with the potential for low bias due to low soluble MS and PDS recoveries. The MS sample matrix appears to be reducing based on the Eh-pH plot and the presence of TOC and ferrous iron. The highest detected hexavalent chromium result was reported for each soil sample.

Sample results qualified due to poor laboratory duplicate precision are usable as estimated values with an unknown directional bias.

ATTACHMENTS

Attachment A: Target Analyte Summary Hitlist(s)

Attachment B: Data Validation Report Form

Attachment A

Target Analyte Summary Hitlist(s)

Soil Target Analyte Summary Hit List (Hexavalent Chromium)

Site Name Site 135 South Pit Bottom
Sampling Date October 13, 2016
Lab Name/ID Accutest, Dayton, NJ
SDG No JC29762 and JC29762R
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID 135-FB20161013

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-DD28A-SW-S-12.4-12.9	JC29762-2R	CHROMIUM (HEXAVALENT)	U	0.75	0.75	0.43	Qualify	1,2,3
135-DD29A-SW-E-4.2-4.7	JC29762-3R	CHROMIUM (HEXAVALENT)	U	2.8	2.8	0.47	Qualify	1,2,3

Note: A “U” under Method Blank column indicates a nondetect result.

NJDEP Laboratory Footnote

1. The reported value or nondetect result was qualified (J) because the PDS recovery was less than 85 percent.

2. The reported value was qualified (J) because the MS recovery or recoveries were less than 75%, but greater than 50%.

3. In the Duplicate Sample Analysis, Hexavalent Chromium fell outside the control limits of $\leq$ 20 percent for sample results > 4xRL or + RL for sample results < 4xRL. Therefore, the result was qualified (J).

Attachment B

Data Validation Report Form

Client Name: PPG Industries	**Project Number:** 60482955.GA.RA.OSS.2016
Site Location: Site 135 South Pit Bottom, Jersey City, NJ	**Project Manager:** Scott Mikaelian
Laboratory: Accutest, Dayton, NJ	**Type of Validation:** Full
Laboratory Job No: JC29762 and JC29762R	**Date Checked:** 12/21/2016
Validator: Dawn Brule	**Peer:** Mary Kozik

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X			
Field I.D. included?	X			
Laboratory I.D. included?	X			
Did data package sample IDs match sample IDs on COC?	X			
Did electronic data deliverable (EDD) sample IDs match COC sample IDs?	X			
Did data package sample IDs match electronic data deliverable (EDD) sample IDs?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6ºC?	X			3.2ºC
Signed COCs included?	X			
Date of sample collection included?	X			
Date of sample digestion included?	X			
Holding time to digestion met criteria? (Soils -30 days from collection to digestion.)	X			
Date of analysis included?	X			
Holding time to analysis met criteria? (Soils -168 hours from digestion to analysis; Aqueous - 24 hours from collection to analysis.	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			
Definitions: MDL - Method Detection Limit; %R - Percent Recovery; RL - Reporting Limit; RPD - Relative Percent Difference; RSD - Relative Standard Deviation :Corr - Correlation Coefficient.				
Initial calibration documentation included in lab package?	X			

ITEM	YES	NO	N/A	COMMENTS
1) Blank plus 4 standards (7196A) or blank plus 3 standards (7199)	X			
2) Correlation coefficient of =0.995 (7196A) or =0.999 (7199)	X			
3) Calibrate daily or each time instrument is set up.	X			
Calibration Check Standard (CCS) for 7196A and Quality Control Sample (QCS) for 7199 Included in Lab Package?	X			
1) %R criteria met? (90 - 110%)	X			
2) Correct frequency of one per every 10 samples	X			
3) CCS and QCS from independent source and at mid-level of calibration curve	X			
Calibration Blanks	X			
1) Analyzed prior to initial calibration standards and after each CCS/QCS?	X			
2) Absolute value should not exceed MDL.	X			
Method Blank, Field Blanks and/or Equipment Blanks Included in Lab Package?	X			
1) Method blank analyzed with each preparation batch?	X			
2) Absolute value should not exceed MDL.	X			
Eh and pH Data	X			
1) Eh and pH data was included and plotted for all samples?	X			
Soluble Matrix Spike Data Included in Lab Package?	X			
1) Soluble Matrix %R criteria met? (75-125%R).		X		See table below.
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?		X		I =47mg/kg & R =47.6mg/kg; No impact to data.
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Insoluble Matrix Spike Data Included in Lab Package?	X			
1) Insoluble Matrix %R criteria met? (75-125%R).	X			
2) Was the spike concentration around 400 to 800 mg/Kg?		X		I =1390mg/kg & R =1160mg/kg; No impact to data.
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Post Digestion Spike	X			

ITEM	YES	NO	N/A	COMMENTS
1) Post Digestion Spike %R criteria met? (85-115%R).		X		See table below.
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?	X			
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Sample Duplicate Data Included in Lab Package?	X			
1) RPD criteria met? (RPD <20%) if both results are >4x RL or absolute difference <RL if either or both results are <4xRL.		X		See table below.
2) Was a sample duplicate analyzed at the frequency of 1 per batch or 20 samples?	X			
Was a Laboratory Control Sample (LCS) Included in Lab Package?	X			
1) %R criteria met? (80-120%R).	X			
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples?	X			
Were any Field Duplicate samples submitted with this SDG?		X		
1) RPD criteria met? (RPD <20%) if both results are >4x RL or absolute difference <RL if either or both results are <4xRL.			X	
Were all sample quantitation and reporting requirements met?	X			
1) Were all solid samples reported with percent solids > 50%?	X			
2) Were any samples analyzed or reported with dilutions?		X		
Miscellaneous Items				
1) For soils by 7196A, was the pH within a range of 7.0-8.0?	X			
2) For soils by 7199, was the pH within a range of 9.0-9.5?			X	
3) For aqueous by 7196A, was the pH with a range of 1.5-2.5?	X			
4) For soils (3060A), was the digestion temperature 90-95C for at least 60 minutes?	X			
5) For 7199, was each sample injected twice and was the RPD <20?			X	

Matrix Spikes

Sample ID	Analyte	Matrix Spike	% Recovery	Lower Limit	Upper Limit	PDS %	PDS Limit %
135-DD29A-SW-E-4.2-4.7	CHROMIUM (HEXAVALENT)	Soluble	28.1	75	125	66; 70 pH adj	85-115
135-DD29A-SW-E-4.2-4.7	CHROMIUM (HEXAVALENT)	Insoluble	99.3	75	125		
135-DD29A-SW-E-4.2-4.7	CHROMIUM (HEXAVALENT)	Soluble	51.1	75	125	76; 75 pH adj	85-115
135-DD29A-SW-E-4.2-4.7	CHROMIUM (HEXAVALENT)	Insoluble	94	75	125		

Lab Duplicates

Sample ID	Lab ID	Analyte	Sample Result	Qual	Duplicate Result	Qual	QL	Units	RPD
135-DD29A-SW-E-4.2-4.7	JC29762-3	CHROMIUM (HEXAVALENT)	2.2		3.9		0.47	mg/kg	55.7
135-DD29A-SW-E-4.2-4.7	JC29762-3R	CHROMIUM (HEXAVALENT)	2.8		2.2		0.47	mg/kg	24.0

SDG#: JC29762/ Method 7196	x - concentration	y - response
Batch: GN53533		
Cr+6 ICAL 10/17/16	0	0
Soil	0.01	0.01
(p. 33 of data pkg)	0.05	0.041
	0.1	0.084
	0.3	0.247
	0.5	0.411
	0.8	0.652
	1	0.833

				(p. 33 of data pkg)
AECOM Calculated Offset	0.0000	OK	Reported Offset	0.0000
AECOM Slope	0.8255	OK	Reported Slope	0.8255
AECOM Calculated r	0.99990	OK	Reported r	0.99990

LCS calculation	**GP762-B1**	**P. 20,33**		
Background Absorbance	0			
Total absorbance	0.716			
Total absorbance - background	0.716			
Instrument Concentration	0.867			
Sample weight (mg/kg)	0.0025			
Final Volume (L)	0.1			
Dilution Factor	1			
AECOM Calculated LCS Result (mg/Kg)	34.7	OK	Reported Result (mg/Kg)	34.7

%R = Found/True*100	**GP762-B1**	**P. 20,33**		
True Value (mg/kg)	40			
AECOM Calculated %R	87	OK	Reported %R	87

MS calculation	**GP762-S1**	**P. 22,23,33**	**JC29762-3**	
Background reading	0.049			
Total absorbance	0.32			
Total absorbance - background	0.271			
Instrument Concentration	0.3283			
Sample weight (mg/kg)	0.00248			
Final Volume (L)	0.1			
Percent solids	0.858			
Dilution Factor	1			
AECOM Calculated MS Result (mg/Kg)	15.4	OK	Reported Result (mg/Kg)	15.4

%R = Found/True*100	**GP762-S1**	**P. 22,23,33**	**JC29762-3**	
True Value (mg/kg)	47			
Native concentration (mg/Kg)	2.2			
AECOM%R	28.2	OK, rounding	Reported %R	28.1

Percent Solids	**JC29762-3**	**P. 23**	**135-DD29A-SW-E-4.2-4.7**	
Empty dish weight=	24.11			
Wet weight=	29.60			
Dry weight=	28.82			
AECOM %solids =	85.8	OK	reported %solids=	85.8

Reporting Limit	**JC29762-3**	**P. 10,23,33**	**135-DD29A-SW-E-4.2-4.7**	
Low Standard	0.01			
Initial weight (mg/kg)	0.00260			
Final volume (L)	0.1			
Percent solids	0.858			
Dilution Factor	1			
Reporting Limit	0.45	OK, rounding	Reported RL (mg/Kg)=	0.47

Sample Calculations	**JC29762-3**	**P. 10,23,33**	**135-DD29A-SW-E-4.2-4.7**	
Background reading	0.058			
Total absorbance	0.098			
Total absorbance - background	0.04			
Instrument Response	0.049			
Sample weight (mg/kg)	0.0026			
Final Volume (L)	0.1			
Percent solids	0.858			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	2.2	OK	Reported Result (mg/Kg)	2.2

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Data Validation Report

Project:	Site 135 Pit Bottom Sampling
Laboratory:	SGS/Accutest, Dayton, NJ
Laboratory Job No.:	JC34136, JC34136R, JC34136A, and JC34136T
Analysis/Method:	Hexavalent Chromium SW846 3060A/7196A/7199 Volatile Organic Compounds (VOCs) by GCMS/SW-846 8260C Semivolatile Organic Compounds (SVOCs) by GCMS/SW-846 8270D TAL Metals SW-846 3010A/3050B/6010C/7470A/7471B
Validation Level:	Full (Hexavalent Chromium) Limited (All Parameters Except Hexavalent Chromium)
Site Location/Address:	PPG Site 135 - Garfield Avenue, Jersey City, NJ
AECOM Project No:	60482955.GA.RA.OSS.2016
Prepared by: Sharon McKechnie/AECOM	Completed on: 01/13/2017
Reviewed by: Mary Kozik/AECOM	File Name : JC34136_A_R_T_2017_01_13-F

Introduction

The data were reviewed in accordance with the FSP-QAPP and the following NJDEP and /or Region 2 validation Standard Operating Procedure(s) (SOP):

- NJDEP Office of Data Quality SOP 5.A.10, Rev 3 (September 2009), SOP for Analytical Data Validation of Hexavalent Chromium - for USEPA SW-846 Method 3060A, USEPA SW-846 Method 7196A;
- NJDEP Office of Data Quality SOP 5.A.16, Rev 1 (May 2002), Quality Assurance Data Validation of Analytical Deliverables for Inorganics (based on USEPA SW-846 Methods);
- ICP-AES Data Validation, SOP No. HW-3a Revision 0 (July 2015);
- Mercury and Cyanide Data Validation, SOP No. HW-3c Revision 0 (July 2015);
- Volatile Organic Compounds By Gas Chromatography/Mass Spectrometry SW-846 Method 8260B, SOP No. HW-33A, Revision 0;
- Semivolatile Data Validation SOP No. HW-35A Revision 0 (June 2015).

The results of quality control data analyzed with site samples were used to assess the overall reliability of the data. The following qualifiers were used to identify data quality issues:

U: Indicates the analyte was not detected in the sample above the sample reporting limit.

J: Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

UJ: Indicates the analyte was not detected above the reporting limit and the reporting limit was approximate.

UB: The analyte concentration is less than or equal to three (3) times the concentration in the associated method/prep blank. The presence of the analyte in the sample is negated (UB) due to laboratory contamination.

JB: The analyte concentration is greater than three (3) times, but less than or equal to ten (10) times the concentration in the associated method/prep blank. The presence of that analyte in the sample is considered "real". The concentration is quantitatively qualified (JB) due to method blank contamination.

R: The sample result was rejected due to serious deficiencies; the presence or absence of the analyte could not be confirmed.

RA: The sample result was rejected due to NJ specific data validation QC requirements; however, the result is usable for project objectives. Refer to the Data Quality and Usability section in this data validation report for further discussion.

Sample Information

The samples listed below were collected by AECOM on December 21, 2016 as part of the Site 135 Pit Bottom sampling at PPG Site 135 - Garfield Avenue, Jersey City, New Jersey. Only the samples and parameter listed below were validated.

Field ID	Laboratory ID	Matrix	Fraction
135-FB20161221 (Equipment Blank)	JC34136-6	Aqueous	Hexavalent Chromium
135-FB20161221 (Equipment Blank)	JC34136-6A	Aqueous	Mercury, Metals, SVOCs and VOCs
135-Y38A-SW-E-10.0-10.5	JC34136-4A	Soil	Mercury, Metals, SVOCs and VOCs
135-Y38A-SW-E-10.0-10.5	JC34136-4,4R,4T	Soil	Hexavalent Chromium
135-Y38A-SW-E-12.0-12.5	JC34136-3A	Soil	Mercury, Metals, SVOCs and VOCs
135-Y38A-SW-E-12.0-12.5	JC34136-3,3R,3T	Soil	Hexavalent Chromium
135-Y38A-SW-E-8.0-8.5	JC34136-5A	Soil	Mercury, Metals, SVOCs and VOCs
135-Y38A-SW-E-8.0-8.5	JC34136-5,5R,5T	Soil	Hexavalent Chromium
135-Z39A-PB-6.1-6.6	JC34136-1A	Soil	Mercury, Metals, SVOCs and VOCs
135-Z39A-PB-6.1-6.6	JC34136-1,1R,1T	Soil	Hexavalent Chromium
135-Z39A-SW-E-4.1-4.6	JC34136-2A	Soil	Mercury, Metals, SVOCs and VOCs
135-Z39A-SW-E-4.1-4.6	JC34136-2,2R,2T	Soil	Hexavalent Chromium

The samples were collected following the procedures detailed in the Work Order for Garfield Avenue Remedial Action (GARA) at Garfield Avenue, Jersey City, NJ and the Field Sampling Plan/Quality Assurance Project Plan for Non-Residential and Residential Chromium Sites Hudson County, New Jersey (December 2011).

General Comments

Quality control (QC) issues identified during validation are discussed below. Refer to the Target Analyte Summary Hit List(s) in Attachment A for a listing of all detected results, qualified results, and associated qualifications, where applicable. The nonconformances for each section discussed below are presented in Attachment B.

Hexavalent Chromium

A possible matrix spike (MS) error was noted on the initial review of SDG JC34136. Partial MS results were reported in SDG JC34136 for both samples 135-Z39A-PB-6.1-6.6 (JC34136-1) and 135-Z39A-SW-E-4.1-4.6 (JC34136-2). The laboratory was unable to confirm which sample was spiked for the MS analysis; therefore this QC data will not be used for data validation purposes. There were no issues impacting the use of QC data reported for the MS analysis of 135-Z39A-SW-E-4.1-4.6 (JC34136-2R) reported in SDG JC34136R (referred to as "first run" below).

All samples were re-prepped and reanalyzed with an MS analysis performed on samples 135-Z39A-PB-6.1-6.6 (JC34136-1T) and 135-Z39A-SW-E-4.1-4.6 (JC34136-2T). The MS results for the third analysis of sample 135-Z39A-SW-E-4.1-4.6 (JC34136-2T) will be used as the second run of the MS analysis and applied for QC (referred to as "second run" below). The highest detected hexavalent chromium result or the nondetect hexavalent chromium result with the lowest RL from all three sets of analyses was reported for each soil sample.

Refer to the tables in Appendix B for a listing of all MS results.

MS Results

Sample 135-Z39A-SW-E-4.1-4.6 (JC34136-2R) was selected for the matrix spike (MS) analysis associated with the samples in this SDG. The soluble and insoluble MS results from the first run were 28.6% and 90.1%, respectively. The soluble MS recovery failed to meet the QC criteria of 75-125%, and was less than 50%. The PDS recovery was 88%, which met the PDS criteria of 85-115%.

Based on the low MS recovery, the samples were reanalyzed using Method 7196. The soluble and insoluble MS results from the second run were 35.2% and 86.7%, respectively. The soluble MS recovery failed to meet the QC criteria of 75-125%, and was less than 50%. The PDS recovery was 71%, and after pH adjustment was 69%, which did not meet the PDS criteria of 85-115%.

Since the soluble MS failed to meet QC criteria, additional parameters were analyzed to determine if matrix interference could be the cause for the poor matrix spike recoveries. All samples included in this sample data group (SDG) were tested for pH and oxidation-reduction potential (ORP), and plotted on an Eh/pH phase diagram. From this chart, the source sample for the matrix spike analysis was plotted on the phase change line, indicating neither a reducing nor an oxidizing potential within the sample matrix, which suggests that the environment may or may not be capable of supporting hexavalent chromium. To confirm the oxidizing/reducing potential within the sample matrix, the additional ancillary parameters ferrous iron, sulfide screen, and total organic carbon (TOC) were analyzed for sample 135-Z39A-SW-E-4.1-4.6 (JC34136-2R). The sulfide screen was reported as nondetect, indicating no reducing agents within the sample matrix; however, the ferrous iron (1.0%) and the TOC results (3,550 mg/kg) were positive, indicating potential reducing agents within the sample matrix.

Since the soluble MS recoveries did not meet the MS QC requirements, but both insoluble MS recoveries were greater than 50%, the reported hexavalent chromium results for the associated samples were qualified as estimated (J/UJ) due to the low soluble MS recoveries. The highest detected hexavalent chromium result or the nondetect hexavalent chromium result with the lowest RL was reported for each soil sample.

Laboratory Duplicate Precision

The laboratory duplicate (LD) relative percent difference (RPD) results for sample 135-Z39A-SW-E-4.1-4.6 (JC34136-2R) and (JC34136-2T) met the QC criteria therefore no hexavalent chromium data in batches GP2264/GN57224 or GP2734/GN58180 was qualified on the basis of LD precision.

The reanalysis LD RPD for sample 135-Z39A-PB-6.1-6.6 (JC34136-1T) did not meet the RPD QC criteria. However, the highest result for sample 135-Z39A-PB-6.1-6.6 was reported from batch GP2264/GN57224 (JC34136-1R); therefore, no hexavalent chromium data was qualified on the basis of LD precision.

Refer to the tables in Appendix B for a listing of all LD results.

TAL Metals

Laboratory Blanks

Sodium and zinc were detected in the method blank (MB) associated with the soil samples in this SDG.

Sodium in samples 135-Z39A-PB-6.1-6.6 (JC34136-1A) and 135-Z39A-SW-E-4.1-4.6 (JC34136-2A) and zinc in sample 135-Z39A-SW-E-4.1-4.6 (JC34136-2A) were reported at concentrations greater than three times but less than ten times the amount in the MB; therefore, the results were estimated (JB).

Additional analytes were detected in the soil and aqueous MB; however, there was no effect on the data. Refer to the Target Analyte Summary Hit List(s) in Attachment A for a listing of all results qualified on the basis of soil MB contamination. Refer to the nonconformance tables in Appendix B for a listing of soil and aqueous MB results and associated qualification actions.

Equipment Blanks

Magnesium and sodium were detected in the equipment blank (EB) associated with the soil samples in this SDG.

Sodium was detected in all samples at concentrations of less than 3 times the EB; therefore, the results were negated (U) at the RL.

Magnesium was reported at concentrations greater than three times but less than ten times the amount in the EB in several samples; therefore, the results were qualified as estimated (J).

Additional analytes were detected in the EB; however, there was no effect on the data. Refer to the Target Analyte Summary Hit List(s) in Attachment A for a listing of all results qualified on the basis of aqueous EB contamination. Refer to the nonconformance tables in Appendix B for a listing of EB results and associated qualification actions.

Matrix Spike Results

Sample 135-Z39A-PB-6.1-6.6 (JC34136-1A) was analyzed as the MS/MSD in this SDG.

The MS and/or MSD were outside the QC criteria for several analytes. In selected cases the MS/MSD RPD was also outside the QC criteria. Therefore, the affected results were qualified as estimated (J) with either a low or an undefined bias in spiked sample 135-Z39A-PB-6.1-6.6 (JC34136-1A).

The MS recovery %R met criteria, but the MSD %R for iron was above the QC limits; however, the amount of iron in the spiked sample was greater than four times the iron spiked. Therefore, no qualification was applied to iron on the basis of MS %R.

Refer to the Target Analyte Summary Hit List(s) in Attachment A for a listing of all results qualified on the basis of MS %R. Refer to the tables in Appendix B for a listing of MS results, bias, and associated qualification actions.

Sample Results

Reported results (flagged B by the laboratory) that were less than the reporting limit (RL) but greater than or equal to the method detection limit (MDL) are approximate values and have been qualified as estimated (J).

VOCs

Laboratory Control Sample

All laboratory control sample (LCS) recoveries were above the QC criteria for 1,1,2-trichlorotrifluoroethane. However, all results for 1,1,2-trichlorotrifluoroethane were nondetected; therefore, the data was not affected. Refer to the tables in Appendix B for a listing of LCS results.

Sample Results

The nondetect results for selected VOCs exceeded the NJDEP DIGWSSL and/or the RDCSRS-GAG; therefore, the nondetect results may not meet project objectives. Refer to the nonconformance tables in Appendix B for a listing of results exceeding the NJDEP DIGWSSL criteria.

Reported results (flagged J by the laboratory) that were less than the RL but greater than or equal to the MDL are approximate values and have been qualified as estimated (J).

SVOCs

Surrogate Recovery

Surrogates 2,4,6-tribromophenol and nitrobenzene-d5 recovered below the QC criteria for sample 135-Y38A-SW-E-12.0-12.5 (JC34136-3A). Therefore, all results in sample 135-Y38A-SW-E-12.0-12.5 (JC34136-3A) were qualified as estimated (J/UJ) and may have a low bias.

Refer to the Target Analyte Summary Hit List(s) in Attachment A for a listing of all results qualified on the basis of surrogate %R. Refer to the tables in Appendix B for a listing of surrogate results and associated qualification actions.

Sample Results

Reported results (flagged J by the laboratory) that were less than the RL but greater than or equal to the MDL are approximate values and have been qualified as estimated (J).

Data Quality and Usability

In general, these data appear to be valid and may be used for decision-making purposes. No data were rejected. Qualified and detected results are presented in Attachments A and B.

Based on the MS soluble and insoluble recoveries, the hexavalent chromium results for all soil samples in this SDG were qualified as estimated. The highest detected hexavalent chromium result between all analytical runs was reported.

Additional issues noted for this sample set:

- Selected metals results were negated or qualified as estimated for MB or EB contamination.
- Several metals in sample 135-Z39A-PB-6.1-6.6 (JC34136-1A) were qualified as estimated for MS recovery and may have either a low or an undefined bias.
- All SVOC results in sample 135-Y38A-SW-E-12.0-12.5 (JC34136-3A) were qualified as estimated due to surrogate recovery and may have a low bias.
- Sample results reported between the MDL and RL were estimated with an unknown direction of bias.
- The nondetect results for selected VOCs exceeded the NJDEP DIGWSSL and/or the RDCSRS-GAG; therefore, the nondetect results may not meet project objectives. Refer to the nonconformance tables in Appendix B for a listing of results exceeding the NJDEP DIGWSSL criteria.

ATTACHMENTS

Attachment A: Target Analyte Summary Hit List(s)

Attachment B: Data Validation Report Form

Attachment A

Target Analyte Summary Hit List(s)

Soil Target Analyte Summary Hit List (Hexavalent Chromium)

Site Name Site 135 Pit Bottom Sampling
Sampling Date December 21, 2016
Lab Name/ID SGS/Accutest, Dayton, NJ
SDG No JC34136, JC34136R, JC34136T
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID 135-FB20161221

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-Y38A-SW-E-10.0-10.5	JC34136-4	CHROMIUM (HEXAVALENT)	U	0.57B	0.57	0.71	Qualify	1,2
135-Y38A-SW-E-12.0-12.5	JC34136-3	CHROMIUM (HEXAVALENT)	U	0.95	0.95	0.60	Qualify	1
135-Y38A-SW-E-8.0-8.5	JC34136-5R	CHROMIUM (HEXAVALENT)	U	0.82	0.82	0.49	Qualify	1
135-Z39A-PB-6.1-6.6	JC34136-1	CHROMIUM (HEXAVALENT)	U	4.4	4.4	0.48	Qualify	1
135-Z39A-SW-E-4.1-4.6	JC34136-2	CHROMIUM (HEXAVALENT)	U	7.5	7.5	0.44	Qualify	1

Note: A “U” under Method Blank column indicates a nondetect result.

NJDEP Laboratory Footnote

1. The sample result was qualified because the MS recoveries did not meet QC criteria but at least one MS%R was >50%.

2. The reported result was greater than the MDL but less than the RL and therefore was estimated.

Soil Target Analyte Summary Hit List (TAL Metals)

Site Name Site 135 Pit Bottom Sampling
Sampling Date December 21, 2016
Lab Name/ID SGS/Accutest, Dayton, NJ
SDG No JC34136A
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID 135-FB20161221

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-Y38A-SW-E-10.0-10.5	JC34136-4A	ALUMINUM	U	7940	7940	88		
135-Y38A-SW-E-10.0-10.5	JC34136-4A	ANTIMONY	U	12.3	12.3	3.5		
135-Y38A-SW-E-10.0-10.5	JC34136-4A	ARSENIC	U	17.5	17.5	3.5		
135-Y38A-SW-E-10.0-10.5	JC34136-4A	BARIUM	U	249	249	35		
135-Y38A-SW-E-10.0-10.5	JC34136-4A	BERYLLIUM	U	0.65	0.65	0.35		
135-Y38A-SW-E-10.0-10.5	JC34136-4A	CADMIUM	U	0.90	0.90	0.88		
135-Y38A-SW-E-10.0-10.5	JC34136-4A	CALCIUM METAL	U	12800	12800	880		
135-Y38A-SW-E-10.0-10.5	JC34136-4A	CHROMIUM	U	22.9	22.9	1.8		
135-Y38A-SW-E-10.0-10.5	JC34136-4A	COBALT	U	10	10	8.8		
135-Y38A-SW-E-10.0-10.5	JC34136-4A	COPPER	U	250	250	4.4		
135-Y38A-SW-E-10.0-10.5	JC34136-4A	IRON	U	11700	11700	88		
135-Y38A-SW-E-10.0-10.5	JC34136-4A	LEAD	U	3300	3300	11		
135-Y38A-SW-E-10.0-10.5	JC34136-4A	MAGNESIUM	U	1100	1100	880	Qualify	3
135-Y38A-SW-E-10.0-10.5	JC34136-4A	MANGANESE	U	163	163	2.6		
135-Y38A-SW-E-10.0-10.5	JC34136-4A	NICKEL	U	27.3	27.3	7.0		
135-Y38A-SW-E-10.0-10.5	JC34136-4A	POTASSIUM	U	1330B	1330	1800	Qualify	1
135-Y38A-SW-E-10.0-10.5	JC34136-4A	SELENIUM	U	2.8B	2.8	3.5	Qualify	1

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-Y38A-SW-E-10.0-10.5	JC34136-4A	SILVER	U	0.77B	0.77	0.88	Qualify	1
135-Y38A-SW-E-10.0-10.5	JC34136-4A	SODIUM	U	1530B	U	1800	Negate	2
135-Y38A-SW-E-10.0-10.5	JC34136-4A	VANADIUM	U	41.7	41.7	8.8		
135-Y38A-SW-E-10.0-10.5	JC34136-4A	ZINC	U	310	310	44		
135-Y38A-SW-E-12.0-12.5	JC34136-3A	ALUMINUM	U	7460	7460	76		
135-Y38A-SW-E-12.0-12.5	JC34136-3A	ANTIMONY	U	138	138	3.1		
135-Y38A-SW-E-12.0-12.5	JC34136-3A	ARSENIC	U	24.1	24.1	3.1		
135-Y38A-SW-E-12.0-12.5	JC34136-3A	BARIUM	U	362	362	31		
135-Y38A-SW-E-12.0-12.5	JC34136-3A	BERYLLIUM	U	0.60	0.60	0.31		
135-Y38A-SW-E-12.0-12.5	JC34136-3A	CADMIUM	U	2.3	2.3	0.76		
135-Y38A-SW-E-12.0-12.5	JC34136-3A	CALCIUM METAL	U	39600	39600	760		
135-Y38A-SW-E-12.0-12.5	JC34136-3A	CHROMIUM	U	40.5	40.5	1.5		
135-Y38A-SW-E-12.0-12.5	JC34136-3A	COBALT	U	12.7	12.7	7.6		
135-Y38A-SW-E-12.0-12.5	JC34136-3A	COPPER	U	349	349	3.8		
135-Y38A-SW-E-12.0-12.5	JC34136-3A	IRON	U	40400	40400	76		
135-Y38A-SW-E-12.0-12.5	JC34136-3A	LEAD	U	2560	2560	9.2		
135-Y38A-SW-E-12.0-12.5	JC34136-3A	MAGNESIUM	U	2460	2460	760	Qualify	3
135-Y38A-SW-E-12.0-12.5	JC34136-3A	MANGANESE	U	387	387	2.3		
135-Y38A-SW-E-12.0-12.5	JC34136-3A	NICKEL	U	89.0	89.0	6.1		
135-Y38A-SW-E-12.0-12.5	JC34136-3A	POTASSIUM	U	1470B	1470	1500	Qualify	1
135-Y38A-SW-E-12.0-12.5	JC34136-3A	SELENIUM	U	6.3	6.3	3.1		
135-Y38A-SW-E-12.0-12.5	JC34136-3A	SILVER	U	1.1	1.1	0.76		
135-Y38A-SW-E-12.0-12.5	JC34136-3A	SODIUM	U	1170B	U	1500	Negate	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	VANADIUM	U	53.9	53.9	7.6		
135-Y38A-SW-E-12.0-12.5	JC34136-3A	ZINC	U	544	544	38		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-Y38A-SW-E-8.0-8.5	JC34136-5A	ALUMINUM	U	7910	7910	62		
135-Y38A-SW-E-8.0-8.5	JC34136-5A	ANTIMONY	U	4.2	4.2	2.5		
135-Y38A-SW-E-8.0-8.5	JC34136-5A	ARSENIC	U	8.3	8.3	2.5		
135-Y38A-SW-E-8.0-8.5	JC34136-5A	BARIUM	U	121	121	25		
135-Y38A-SW-E-8.0-8.5	JC34136-5A	BERYLLIUM	U	0.58	0.58	0.25		
135-Y38A-SW-E-8.0-8.5	JC34136-5A	CADMIUM	U	0.72	0.72	0.62		
135-Y38A-SW-E-8.0-8.5	JC34136-5A	CALCIUM METAL	U	7140	7140	620		
135-Y38A-SW-E-8.0-8.5	JC34136-5A	CHROMIUM	U	20.2	20.2	1.2		
135-Y38A-SW-E-8.0-8.5	JC34136-5A	COBALT	U	8.8	8.8	6.2		
135-Y38A-SW-E-8.0-8.5	JC34136-5A	COPPER	U	80.4	80.4	3.1		
135-Y38A-SW-E-8.0-8.5	JC34136-5A	IRON	U	16500	16500	62		
135-Y38A-SW-E-8.0-8.5	JC34136-5A	LEAD	U	214	214	2.5		
135-Y38A-SW-E-8.0-8.5	JC34136-5A	MAGNESIUM	U	2110	2110	620	Qualify	3
135-Y38A-SW-E-8.0-8.5	JC34136-5A	MANGANESE	U	311	311	1.8		
135-Y38A-SW-E-8.0-8.5	JC34136-5A	NICKEL	U	28.6	28.6	4.9		
135-Y38A-SW-E-8.0-8.5	JC34136-5A	POTASSIUM	U	1230	1230	1200		
135-Y38A-SW-E-8.0-8.5	JC34136-5A	SELENIUM	U	0.75B	0.75	2.5	Qualify	1
135-Y38A-SW-E-8.0-8.5	JC34136-5A	SILVER	U	0.53B	0.53	0.62	Qualify	1
135-Y38A-SW-E-8.0-8.5	JC34136-5A	SODIUM	U	795B	U	1200	Negate	2
135-Y38A-SW-E-8.0-8.5	JC34136-5A	VANADIUM	U	31.0	31.0	6.2		
135-Y38A-SW-E-8.0-8.5	JC34136-5A	ZINC	U	220	220	31		
135-Z39A-PB-6.1-6.6	JC34136-1A	ALUMINUM	U	8280	8280	57	Qualify	5
135-Z39A-PB-6.1-6.6	JC34136-1A	ANTIMONY	U	2.1B	2.1	2.3	Qualify	1,5
135-Z39A-PB-6.1-6.6	JC34136-1A	ARSENIC	U	5.5	5.5	2.3		
135-Z39A-PB-6.1-6.6	JC34136-1A	BARIUM	U	114	114	23	Qualify	5

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-Z39A-PB-6.1-6.6	JC34136-1A	BERYLLIUM	U	0.50	0.50	0.23		
135-Z39A-PB-6.1-6.6	JC34136-1A	CADMIUM	U	0.79	0.79	0.57		
135-Z39A-PB-6.1-6.6	JC34136-1A	CALCIUM METAL	U	7030	7030	570	Qualify	5
135-Z39A-PB-6.1-6.6	JC34136-1A	CHROMIUM	U	187	187	1.1		
135-Z39A-PB-6.1-6.6	JC34136-1A	COBALT	U	9.0	9.0	5.7		
135-Z39A-PB-6.1-6.6	JC34136-1A	COPPER	U	55.5	55.5	2.9		
135-Z39A-PB-6.1-6.6	JC34136-1A	IRON	U	17600	17600	57		
135-Z39A-PB-6.1-6.6	JC34136-1A	LEAD	U	183	183	2.3	Qualify	5
135-Z39A-PB-6.1-6.6	JC34136-1A	MAGNESIUM	U	4960	4960	570		
135-Z39A-PB-6.1-6.6	JC34136-1A	MANGANESE	U	181	181	1.7		
135-Z39A-PB-6.1-6.6	JC34136-1A	NICKEL	U	23.5	23.5	4.6		
135-Z39A-PB-6.1-6.6	JC34136-1A	POTASSIUM	U	3370	3370	1100	Qualify	5
135-Z39A-PB-6.1-6.6	JC34136-1A	SELENIUM	U	0.57B	0.57	2.3	Qualify	1
135-Z39A-PB-6.1-6.6	JC34136-1A	SILVER	U	0.32B	0.32	0.57	Qualify	1
135-Z39A-PB-6.1-6.6	JC34136-1A	SODIUM	U	350B	U	1100	Negate	2
135-Z39A-PB-6.1-6.6	JC34136-1A	VANADIUM	U	37.2	37.2	5.7		
135-Z39A-PB-6.1-6.6	JC34136-1A	ZINC	U	192	192	29	Qualify	5
135-Z39A-SW-E-4.1-4.6	JC34136-2A	ALUMINUM	U	6070	6070	54		
135-Z39A-SW-E-4.1-4.6	JC34136-2A	ANTIMONY	U	2.8	2.8	2.2		
135-Z39A-SW-E-4.1-4.6	JC34136-2A	ARSENIC	U	3.3	3.3	2.2		
135-Z39A-SW-E-4.1-4.6	JC34136-2A	BARIUM	U	85.8	85.8	22		
135-Z39A-SW-E-4.1-4.6	JC34136-2A	BERYLLIUM	U	0.39	0.39	0.22		
135-Z39A-SW-E-4.1-4.6	JC34136-2A	CADMIUM	U	0.48B	0.48	0.54	Qualify	1
135-Z39A-SW-E-4.1-4.6	JC34136-2A	CALCIUM METAL	U	7020	7020	540		
135-Z39A-SW-E-4.1-4.6	JC34136-2A	CHROMIUM	U	139	139	1.1		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-Z39A-SW-E-4.1-4.6	JC34136-2A	COBALT	U	7.8	7.8	5.4		
135-Z39A-SW-E-4.1-4.6	JC34136-2A	COPPER	U	58.4	58.4	2.7		
135-Z39A-SW-E-4.1-4.6	JC34136-2A	IRON	U	14700	14700	54		
135-Z39A-SW-E-4.1-4.6	JC34136-2A	LEAD	U	121	121	2.2		
135-Z39A-SW-E-4.1-4.6	JC34136-2A	MAGNESIUM	U	4920	4920	540		
135-Z39A-SW-E-4.1-4.6	JC34136-2A	MANGANESE	U	141	141	1.6		
135-Z39A-SW-E-4.1-4.6	JC34136-2A	NICKEL	U	20.4	20.4	4.3		
135-Z39A-SW-E-4.1-4.6	JC34136-2A	POTASSIUM	U	3550	3550	1100		
135-Z39A-SW-E-4.1-4.6	JC34136-2A	SILVER	U	0.34B	0.34	0.54	Qualify	1
135-Z39A-SW-E-4.1-4.6	JC34136-2A	SODIUM	U	305B	U	1100	Negate	2
135-Z39A-SW-E-4.1-4.6	JC34136-2A	VANADIUM	U	31.5	31.5	5.4		
135-Z39A-SW-E-4.1-4.6	JC34136-2A	ZINC	U	76.2	76.2	27	Qualify	4
135-Y38A-SW-E-10.0-10.5	JC34136-4A	MERCURY	U	0.76	0.76	0.046		
135-Y38A-SW-E-12.0-12.5	JC34136-3A	MERCURY	U	2.1	2.1	0.22		
135-Y38A-SW-E-8.0-8.5	JC34136-5A	MERCURY	U	0.42	0.42	0.038		
135-Z39A-PB-6.1-6.6	JC34136-1A	MERCURY	U	0.45	0.45	0.038		
135-Z39A-SW-E-4.1-4.6	JC34136-2A	MERCURY	U	0.23	0.23	0.036		

Note: A “U” under Method Blank column indicates a nondetect result.
A “U” under the Laboratory Sample Result and Validation Sample Result columns indicates a nondetect result at the RL.

NJDEP Laboratory Footnote

1. The reported result was greater than the MDL but less than the RL and therefore was estimated.

2. The value reported is less than or equal to 3x the value in the equipment blank. It is the policy of NJDEP-DPFSR to negate (U) the reported value due to probable foreign contamination unrelated to the actual sample.

3. The value reported is greater than three (3) but less than ten (10) times the value in the trip/field blank and is considered "real". However, the reported value must be quantitatively qualified "J" due to the trip/field blank contamination.

4. The value reported is greater than three (3) but less than ten (10) times the value in the method blank and is considered "real". However, the reported value must be quantitatively qualified "JB" due to the method blank contamination. The "B" qualifier alerts the end-user to the presence of this analyte in the method blank.

5. The result was qualified because the MS recovery and/or RPD did not meet QC criteria.

Aqueous Target Analyte Summary Hit List (TAL Metals)

Site Name Site 135 Pit Bottom Sampling
Sampling Date December 21, 2016
Lab Name/ID SGS/Accutest, Dayton, NJ
SDG No JC34136A
Sample Matrix Aqueous
Trip Blank ID NA
Field Blank ID 135-FB20161221

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/l)	Laboratory Sample Result (ug/l)	Validation Sample Result (ug/l)	RL (ug/l)	Quality Assurance Decision	NJDEP Validation Footnote
135-FB20161221	JC34136-6A	CALCIUM METAL	U	8210	8210	5000		
135-FB20161221	JC34136-6A	MAGNESIUM	U	3220B	3220	5000	Qualify	1
135-FB20161221	JC34136-6A	SODIUM	U	6630B	6630	10000	Qualify	1
135-FB20161221	JC34136-6A	ZINC	U	1.3B	1.3	20	Qualify	1

Note: A “U” under Method Blank column indicates a nondetect result.

NJDEP Laboratory Footnote

1. The reported result was greater than the MDL but less than the RL and therefore was estimated.

Soil Target Analyte Summary Hit List (VOCs and SVOCs)

Site Name Site 135 Pit Bottom Sampling
Sampling Date December 21, 2016
Lab Name/ID SGS/Accutest, Dayton, NJ
SDG No JC34136A
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID 135-FB20161221

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-Y38A-SW-E-10.0-10.5	JC34136-4A	ACETONE	U	24.3	24.3	19		
135-Y38A-SW-E-10.0-10.5	JC34136-4A	CARBON DISULFIDE	U	1.7J	1.7	3.9	Qualify	1
135-Y38A-SW-E-12.0-12.5	JC34136-3A	TETRACHLOROETHENE	U	8270	8270	210		
135-Y38A-SW-E-12.0-12.5	JC34136-3A	TOLUENE	U	44.3J	44.3	100	Qualify	1
135-Y38A-SW-E-8.0-8.5	JC34136-5A	ACETONE	U	11.7	11.7	11		
135-Y38A-SW-E-8.0-8.5	JC34136-5A	CARBON DISULFIDE	U	0.66J	0.66	2.2	Qualify	1
135-Y38A-SW-E-8.0-8.5	JC34136-5A	TOLUENE	U	1.7	1.7	1.1		
135-Z39A-PB-6.1-6.6	JC34136-1A	DICHLOROMETHANE	U	3.3J	3.3	5.7	Qualify	1
135-Z39A-PB-6.1-6.6	JC34136-1A	ETHYLBENZENE	U	0.37J	0.37	1.1	Qualify	1
135-Z39A-PB-6.1-6.6	JC34136-1A	STYRENE (MONOMER)	U	0.40J	0.40	2.3	Qualify	1
135-Z39A-PB-6.1-6.6	JC34136-1A	TOLUENE	U	2.7	2.7	1.1		
135-Z39A-SW-E-4.1-4.6	JC34136-2A	ETHYLBENZENE	U	1.4	1.4	1.0		
135-Z39A-SW-E-4.1-4.6	JC34136-2A	ISOPROPYLBENZENE	U	0.33J	0.33	2.0	Qualify	1
135-Z39A-SW-E-4.1-4.6	JC34136-2A	STYRENE (MONOMER)	U	2.1	2.1	2.0		
135-Z39A-SW-E-4.1-4.6	JC34136-2A	TOLUENE	U	26.5	26.5	1.0		
135-Y38A-SW-E-10.0-10.5	JC34136-4A	2-METHYLNAPHTHALENE	U	32.0J	32.0	120	Qualify	1

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-Y38A-SW-E-10.0-10.5	JC34136-4A	3+4-METHYLPHENOL	U	389	389	120		
135-Y38A-SW-E-10.0-10.5	JC34136-4A	FLUORANTHENE	U	37.3J	37.3	58	Qualify	1
135-Y38A-SW-E-10.0-10.5	JC34136-4A	NAPHTHALENE	U	182	182	58		
135-Y38A-SW-E-10.0-10.5	JC34136-4A	PHENANTHRENE	U	44.6J	44.6	58	Qualify	1
135-Y38A-SW-E-10.0-10.5	JC34136-4A	PYRENE	U	34.6J	34.6	58	Qualify	1
135-Y38A-SW-E-12.0-12.5	JC34136-3A	1,2,4,5-TETRACHLOROBENZENE	U	U	U	250	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	1,4-DIOXANE	U	U	U	49	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	1-1'-BIPHENYL	U	99.7	99.7	98	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	2,2'-OXYBIS(1-CHLOROPROPANE)	U	U	U	98	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	2,3,4,6-Tetrachlorophenol	U	U	U	250	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	2,4,5-TRICHLOROPHENOL	U	U	U	250	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	2,4,6-TRICHLOROPHENOL	U	U	U	250	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	2,4-DICHLOROPHENOL	U	U	U	250	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	2,4-DIMETHYLPHENOL	U	U	U	250	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	2,4-DINITROPHENOL	U	U	U	250	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	2,4-DINITROTOLUENE	U	U	U	49	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	2,6-DINITROTOLUENE	U	U	U	49	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	2-CHLORONAPHTHALENE	U	U	U	98	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	2-CHLOROPHENOL	U	U	U	98	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	2-METHYLNAPHTHALENE	U	414	414	98	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	2-METHYLPHENOL	U	36.5J	36.5	98	Qualify	1, 2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	2-NITROANILINE	U	U	U	250	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	2-NITROPHENOL	U	U	U	250	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	3,3'-DICHLOROBENZIDINE	U	U	U	98	Qualify	2

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-Y38A-SW-E-12.0-12.5	JC34136-3A	3,5,5-TRIMETHYL-2-CYCLOHEXENE-1-ONE	U	U	U	98	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	3+4-METHYLPHENOL	U	531	531	98	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	3-NITROANILINE	U	U	U	250	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	4,6-DINITRO-2-METHYLPHENOL	U	U	U	250	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	4-BROMOPHENYL PHENYL ETHER	U	U	U	98	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	4-CHLORO-3-METHYLPHENOL	U	U	U	250	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	4-CHLOROPHENYL PHENYL ETHER	U	U	U	98	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	4-NITROPHENOL	U	U	U	490	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	ACENAPHTHENE	U	513	513	49	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	ACENAPHTHYLENE	U	463	463	49	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	ACETOPHENONE	U	74.4J	74.4	250	Qualify	1, 2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	ANTHRACENE	U	1220	1220	49	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	ATRAZINE	U	U	U	98	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	BENZALDEHYDE	U	266	266	250	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	BENZO(A)ANTHRACENE	U	3020	3020	49	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	BENZO(A)PYRENE	U	2610	2610	49	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	BENZO(B)FLUORANTHENE	U	3270	3270	49	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	BENZO(G,H,I)PERYLENE	U	1680	1680	49	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	BENZO(K)FLUORANTHENE	U	1080	1080	49	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	BENZYL BUTYL PHTHALATE	U	U	U	98	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	BIS(-2-CHLOROETHOXY)METHANE	U	U	U	98	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	BIS(2-CHLOROETHYL)ETHER	U	U	U	98	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	BIS(2-ETHYLHEXYL)PHTHALATE	U	U	U	98	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	CAPROLACTAM	U	U	U	98	Qualify	2

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-Y38A-SW-E-12.0-12.5	JC34136-3A	CARBAZOLE	U	408	408	98	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	CHRYSENE	U	2990	2990	49	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	DIBENZO(A,H)ANTHRACENE	U	481	481	49	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	DIBENZOFURAN	U	335	335	98	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	DIETHYL PHTHALATE	U	U	U	98	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	DIMETHYL PHTHALATE	U	U	U	98	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	DI-N-BUTYLPHTHALATE	U	U	U	98	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	DI-N-OCTYL PHTHALATE	U	U	U	98	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	FLUORANTHENE	U	4530	4530	49	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	FLUORENE	U	498	498	49	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	HEXACHLORO-1,3-BUTADIENE	U	U	U	49	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	HEXACHLOROBENZENE	U	U	U	98	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	HEXACHLOROCYCLOPENTADIENE	U	U	U	490	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	HEXACHLOROETHANE	U	U	U	250	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	INDENO(1,2,3-CD)PYRENE	U	1470	1470	49	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	NAPHTHALENE	U	787	787	49	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	NITROBENZENE	U	U	U	98	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	N-NITROSO-DI-N-PROPYLAMINE	U	U	U	98	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	N-NITROSODIPHENYLAMINE	U	U	U	250	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	P-CHLOROANILINE	U	U	U	250	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	PENTACHLOROPHENOL	U	U	U	200	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	PHENANTHRENE	U	4090	4090	49	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	PHENOL	U	222	222	98	Qualify	2
135-Y38A-SW-E-12.0-12.5	JC34136-3A	P-NITROANILINE	U	U	U	250	Qualify	2

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-Y38A-SW-E-12.0-12.5	JC34136-3A	PYRENE	U	5860	5860	98	Qualify	2
135-Y38A-SW-E-8.0-8.5	JC34136-5A	2-METHYLNAPHTHALENE	U	28.5J	28.5	82	Qualify	1
135-Y38A-SW-E-8.0-8.5	JC34136-5A	3+4-METHYLPHENOL	U	68.8J	68.8	82	Qualify	1
135-Y38A-SW-E-8.0-8.5	JC34136-5A	ACENAPHTHENE	U	45.3	45.3	41		
135-Y38A-SW-E-8.0-8.5	JC34136-5A	ACENAPHTHYLENE	U	56.5	56.5	41		
135-Y38A-SW-E-8.0-8.5	JC34136-5A	ANTHRACENE	U	115	115	41		
135-Y38A-SW-E-8.0-8.5	JC34136-5A	BENZALDEHYDE	U	95.7J	95.7	210	Qualify	1
135-Y38A-SW-E-8.0-8.5	JC34136-5A	BENZO(A)ANTHRACENE	U	355	355	41		
135-Y38A-SW-E-8.0-8.5	JC34136-5A	BENZO(A)PYRENE	U	349	349	41		
135-Y38A-SW-E-8.0-8.5	JC34136-5A	BENZO(B)FLUORANTHENE	U	434	434	41		
135-Y38A-SW-E-8.0-8.5	JC34136-5A	BENZO(G,H,I)PERYLENE	U	223	223	41		
135-Y38A-SW-E-8.0-8.5	JC34136-5A	BENZO(K)FLUORANTHENE	U	167	167	41		
135-Y38A-SW-E-8.0-8.5	JC34136-5A	CARBAZOLE	U	39.0J	39.0	82	Qualify	1
135-Y38A-SW-E-8.0-8.5	JC34136-5A	CHRYSENE	U	390	390	41		
135-Y38A-SW-E-8.0-8.5	JC34136-5A	DIBENZO(A,H)ANTHRACENE	U	62.2	62.2	41		
135-Y38A-SW-E-8.0-8.5	JC34136-5A	DIBENZOFURAN	U	33.1J	33.1	82	Qualify	1
135-Y38A-SW-E-8.0-8.5	JC34136-5A	FLUORANTHENE	U	630	630	41		
135-Y38A-SW-E-8.0-8.5	JC34136-5A	FLUORENE	U	51.9	51.9	41		
135-Y38A-SW-E-8.0-8.5	JC34136-5A	INDENO(1,2,3-CD)PYRENE	U	231	231	41		
135-Y38A-SW-E-8.0-8.5	JC34136-5A	NAPHTHALENE	U	109	109	41		
135-Y38A-SW-E-8.0-8.5	JC34136-5A	PHENANTHRENE	U	450	450	41		
135-Y38A-SW-E-8.0-8.5	JC34136-5A	PYRENE	U	817	817	41		
135-Z39A-PB-6.1-6.6	JC34136-1A	2-METHYLNAPHTHALENE	U	100	100	80		
135-Z39A-PB-6.1-6.6	JC34136-1A	ACENAPHTHYLENE	U	24.1J	24.1	40	Qualify	1

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-Z39A-PB-6.1-6.6	JC34136-1A	ANTHRACENE	U	34.8J	34.8	40	Qualify	1
135-Z39A-PB-6.1-6.6	JC34136-1A	BENZO(A)ANTHRACENE	U	124	124	40		
135-Z39A-PB-6.1-6.6	JC34136-1A	BENZO(A)PYRENE	U	160	160	40		
135-Z39A-PB-6.1-6.6	JC34136-1A	BENZO(B)FLUORANTHENE	U	192	192	40		
135-Z39A-PB-6.1-6.6	JC34136-1A	BENZO(G,H,I)PERYLENE	U	222	222	40		
135-Z39A-PB-6.1-6.6	JC34136-1A	BENZO(K)FLUORANTHENE	U	63.0	63.0	40		
135-Z39A-PB-6.1-6.6	JC34136-1A	CHRYSENE	U	154	154	40		
135-Z39A-PB-6.1-6.6	JC34136-1A	DIBENZO(A,H)ANTHRACENE	U	46.9	46.9	40		
135-Z39A-PB-6.1-6.6	JC34136-1A	DIBENZOFURAN	U	19.4J	19.4	80	Qualify	1
135-Z39A-PB-6.1-6.6	JC34136-1A	FLUORANTHENE	U	168	168	40		
135-Z39A-PB-6.1-6.6	JC34136-1A	FLUORENE	U	18.6J	18.6	40	Qualify	1
135-Z39A-PB-6.1-6.6	JC34136-1A	INDENO(1,2,3-CD)PYRENE	U	139	139	40		
135-Z39A-PB-6.1-6.6	JC34136-1A	NAPHTHALENE	U	40.0	40.0	40		
135-Z39A-PB-6.1-6.6	JC34136-1A	PHENANTHRENE	U	147	147	40		
135-Z39A-PB-6.1-6.6	JC34136-1A	PYRENE	U	227	227	40		
135-Z39A-SW-E-4.1-4.6	JC34136-2A	2-METHYLNAPHTHALENE	U	16.4J	16.4	72	Qualify	1
135-Z39A-SW-E-4.1-4.6	JC34136-2A	ACENAPHTHENE	U	15.3J	15.3	36	Qualify	1
135-Z39A-SW-E-4.1-4.6	JC34136-2A	ACENAPHTHYLENE	U	18.6J	18.6	36	Qualify	1
135-Z39A-SW-E-4.1-4.6	JC34136-2A	ANTHRACENE	U	52.2	52.2	36		
135-Z39A-SW-E-4.1-4.6	JC34136-2A	BENZO(A)ANTHRACENE	U	179	179	36		
135-Z39A-SW-E-4.1-4.6	JC34136-2A	BENZO(A)PYRENE	U	192	192	36		
135-Z39A-SW-E-4.1-4.6	JC34136-2A	BENZO(B)FLUORANTHENE	U	248	248	36		
135-Z39A-SW-E-4.1-4.6	JC34136-2A	BENZO(G,H,I)PERYLENE	U	149	149	36		
135-Z39A-SW-E-4.1-4.6	JC34136-2A	BENZO(K)FLUORANTHENE	U	86.0	86.0	36		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-Z39A-SW-E-4.1-4.6	JC34136-2A	CARBAZOLE	U	20.7J	20.7	72	Qualify	1
135-Z39A-SW-E-4.1-4.6	JC34136-2A	CHRYSENE	U	188	188	36		
135-Z39A-SW-E-4.1-4.6	JC34136-2A	DIBENZO(A,H)ANTHRACENE	U	38.6	38.6	36		
135-Z39A-SW-E-4.1-4.6	JC34136-2A	FLUORANTHENE	U	266	266	36		
135-Z39A-SW-E-4.1-4.6	JC34136-2A	FLUORENE	U	20.2J	20.2	36	Qualify	1
135-Z39A-SW-E-4.1-4.6	JC34136-2A	INDENO(1,2,3-CD)PYRENE	U	131	131	36		
135-Z39A-SW-E-4.1-4.6	JC34136-2A	NAPHTHALENE	U	15.0J	15.0	36	Qualify	1
135-Z39A-SW-E-4.1-4.6	JC34136-2A	PHENANTHRENE	U	195	195	36		
135-Z39A-SW-E-4.1-4.6	JC34136-2A	PYRENE	U	339	339	36		

Note: A “U” under Method Blank column indicates a nondetect result.
A “U” under the Laboratory Sample Result and Validation Sample Result columns indicates a nondetect result at the RL.

NJDEP Laboratory Footnote

1. The reported result was greater than the MDL but less than the RL and therefore was estimated.
2. The result was qualified because the surrogate recovery (s) did not meet QC criteria.

Attachment B

Data Validation Report Form

Client Name: PPG Industries	**Project Number:** 60482955.GA.RA.OSS.2016
Site Location: Site 135 Pit Bottom Sampling, Jersey City, NJ	**Project Manager:** Scott Mikaelian
Laboratory: SGS/Accutest, Dayton, NJ	**Type of Validation:** Full
Laboratory Job No: JC34136, JC34136R	**Date Checked:** 01/13/2017
Validator: Sharon McKechnie	**Peer:** Mary Kozik

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X			
Field I.D. included?	X			
Laboratory I.D. included?	X			
Did data package sample IDs match sample IDs on COC?	X			
Did electronic data deliverable (EDD) sample IDs match COC sample IDs?	X			
Did data package sample IDs match electronic data deliverable (EDD) sample IDs?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6ºC?	X			
Signed COCs included?	X			
Date of sample collection included?	X			
Date of sample digestion included?	X			
Holding time to digestion met criteria? (Soils -30 days from collection to digestion.)	X			
Date of analysis included?	X			
Holding time to analysis met criteria? (Soils -168 hours from digestion to analysis; Aqueous - 24 hours from collection to analysis.	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			

Definitions: MDL - Method Detection Limit; %R - Percent Recovery; RL - Reporting Limit; RPD - Relative Percent Difference; RSD - Relative Standard Deviation :Corr - Correlation Coefficient.

ITEM	YES	NO	N/A	COMMENTS
Initial calibration documentation included in lab package?	X			
1) Blank plus 4 standards (7196A) or blank plus 3 standards (7199)	X			
2) Correlation coefficient of >0.995 (7196A) or >0.999 (7199)	X			
3) Calibrate daily or each time instrument is set up.	X			
Calibration Check Standard (CCS) for 7196A and Quality Control Sample (QCS) for 7199 Included in Lab Package?	X			
1) %R criteria met? (90 - 110%)	X			
2) Correct frequency of one per every 10 samples	X			
3) CCS and QCS from independent source and at mid- level of calibration curve	X			
Calibration Blanks	X			
1) Analyzed prior to initial calibration standards and after each CCS/QCS?	X			
2) Absolute value should not exceed MDL.	X			
Method Blank, Field Blanks and/or Equipment Blanks Included in Lab Package?	X			
1) Method blank analyzed with each preparation batch?	X			
2) Absolute value should not exceed MDL.	X			
Eh and pH Data	X			
1) Eh and pH data was included and plotted for all samples?	X			
Soluble Matrix Spike Data Included in Lab Package?	X			JC34136-2R/2T
1) Soluble Matrix %R criteria met? (75-125%R).		X		See table
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?		X		JC34136-2R/2T Initial and rerun spiked at 43 mg/kg and 43.7 mg/kg, respectively. The data was not affected.
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Insoluble Matrix Spike Data Included in Lab Package?	X			JC34136-2R/2T
1) Insoluble Matrix %R criteria met? (75-125%R).	X			See table
2) Was the spike concentration around 400 to 800 mg/Kg?		X		JC34136-2R/2T Initial and rerun spiked at 796 mg/kg and 1150 mg/kg, respectively. The data was not affected.
Post Digestion Spike	X			JC34136-2R/2T
1) Post Digestion Spike %R criteria met? (85-115%R).		X		No quals added. See table
2) Was the spike concentration 40 mg/Kg or twice the	X			

ITEM	YES	NO	N/A	COMMENTS
sample concentration?				
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Sample Duplicate Data Included in Lab Package?	X			JC34136-2R/2T/1T
1) RPD criteria met? (RPD < 20%) if both results are ≥4x RL or control limit of± RL if both results are <4xRL.	X	X*		JC34136-2R/2T met criteria /*1T did not meet criteria. See Table
2) Was a sample duplicate analyzed at the frequency of 1 per batch or 20 samples?	X			
Was a Laboratory Control Sample (LCS) Included in Lab Package?	X			
1) %R criteria met? (80-120%R).	X			
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples?	X			
Were any Field Duplicate samples submitted with this SDG?		X		
1) RPD criteria met? (RPD < 20%) if both results are ≥4x RL or control limit of± RL if both results are <4xRL.			X	
Were all sample quantitation and reporting requirements met?	X			
1) Were all solid samples reported with percent solids > 50%?	X			All met criteria, no table
2) Were any samples analyzed or reported with dilutions?		X		No dilutions
Miscellaneous Items	X			
1) For soils by 7196A, was the pH within a range of 7.0-8.0?	X			
2) For soils by 7199, was the pH within a range of 9.0-9.5?			X	
3) For aqueous by 7196A, was the pH with a range of 1.5-2.5?	X			
4) For soils (3060A), was the digestion temperature 90-95C for at least 60 minutes?	X			
5) For 7199, was each sample injected twice and was the RPD ≤20?			X	
Chromium result greater than corresponding hexavalent chromium result where applicable?	X			See Table

Matrix Spikes

Sample ID	Lab ID	Analyte	Matrix Spike	% Recovery	Lower Limit	Upper Limit	PDS%/pH Adj PDS	PDS Limits
135-Z39A-SW-E-4.1-4.6	JC34136-2R	CHROMIUM (HEXAVALENT)	Soluble	28.6	75	125	88/NA	85-115
135-Z39A-SW-E-4.1-4.6	JC34136-2R	CHROMIUM (HEXAVALENT)	Insoluble	90.1	75	125		
135-Z39A-SW-E-4.1-4.6	JC34136-2T	CHROMIUM (HEXAVALENT)	Soluble	35.2	75	125	71/69	85-115
135-Z39A-SW-E-4.1-4.6	JC34136-2T	CHROMIUM (HEXAVALENT)	Insoluble	86.7	75	125		
135-Z39A-PB-6.1-6.6	JC34136-1T*	CHROMIUM (HEXAVALENT)	Soluble	51.4	75	125	81/82	85-115
135-Z39A-PB-6.1-6.6	JC34136-1T*	CHROMIUM (HEXAVALENT)	Insoluble	85.9	75	125		
MS results for JC34136-1T added for informational purposes.								

Lab Duplicates

Sample ID	Lab ID	Analyte	Sample Result	Duplicate Result	QL	Units	RPD (%)	Action
135-Z39A-SW-E-4.1-4.6	JC34136-2R	CHROMIUM (HEXAVALENT)	0.61	0.48	0.44	mg/kg	23.9	Both Results <4XRL, Absolute Difference 0.13 mg/kg<RL, Accept
135-Z39A-SW-E-4.1-4.6	JC34136-2T	CHROMIUM (HEXAVALENT)	0.31 U	0.46	0.31	mg/kg	NC	RPD Not Calculable (NC). Detected result <4X RL, Accept.
135-Z39A-PB-6.1-6.6	JC34136-1T	CHROMIUM (HEXAVALENT)	1.7	6.7	0.48	mg/kg	119	RPD > 20%, One Result >4X RL, One Result <4X RL, Estimate JC34136-1T only. **No actions** since 1T not highest reported result for this sample.

Total Chromium vs Hexavalent Chromium

Lab Sample ID	Total Chromium (mg/kg)	Total Chromium Reporting Limit (mg/kg)	Total Hexavalent Chromium (mg/kg)	Hexavalent Chromium Reporting Limit (mg/kg)	Action
JC34136-1A	187	1.1	2.2	0.48	Cr >Cr6, Accept
JC34136-2A	139	1.1	7.5	0.44	Cr >Cr6, Accept
JC34136-3A	40.5	1.5	0.95	0.60	Cr >Cr6, Accept
JC34136-4A	22.9	1.8	0.57	0.71	Cr >Cr6, Accept
JC34136-5A	20.2	1.2	0.82	0.49	Cr >Cr6, Accept
JC34136-6A (ug/l)	0	10	0	10	Both Nondetect, Accept

SDG#: JC34136/ Method 7196	x - concentration	y - response
Batch: GN57026		
Cr+6 ICAL 12/22/16	0	0
Soil	0.01	0.008
(p. 53 of data pkg)	0.05	0.04
	0.1	0.081
	0.3	0.24
	0.5	0.396
	0.8	0.627
	1	0.804

				(p. 53 of data pkg)
AECOM Calculated Offset	-0.0001	OK	Reported Offset	-0.0001
AECOM Slope	0.7960	OK	Reported Slope	0.796
AECOM Calculated r	0.99987	OK	Reported r	0.99987

LCS calculation	**GP2225-B1**	**P.28,53**		
Background Absorbance	0			
Total absorbance	0.714			
Total absorbance - background	0.714			
Instrument Concentration	0.897			
Sample weight (mg/kg)	0.0025			
Final Volume (L)	0.1			
Dilution Factor	1			
AECOM Calculated LCS Result (mg/Kg)	35.9	OK	Reported Result (mg/Kg)	35.9

%R = Found/True*100	**GP2225-B1**	**P.28,53**		
True Value (mg/kg)	40			
AECOM Calculated %R	89.7	OK, rounding	Reported %R	89.8

MS Calc Omitted due to spiking error

Percent Solids	**JC34136-2**	**P.31**	**135-Z39A-SW-E-4.1-4.6**	
Empty dish weight=	26.43			
Wet weight=	32.17			
Dry weight=	31.62			
AECOM%solids =	90.4	OK	reported %solids=	90.4

Reporting Limit	**JC34136-2**	**P.9,53**	**135-Z39A-SW-E-4.1-4.6**	
Low Standard	0.01			
Initial weight (mg/kg)	0.0025			
Final volume (L)	0.1			
Percent solids	0.904			
Dilution Factor	1			
Reporting Limit	0.44	OK	Reported RL (mg/Kg)=	0.44

<u>Sample Calculations</u>	**JC34136-2**	**P.9,53**	**135-Z39A-SW-E-4.1-4.6**	
Background reading	0.028			
Total absorbance	0.166			
Total absorbance - background	0.138			
Instrument Response	0.174			
Sample weight (mg/kg)	0.00257			
Final Volume (L)	0.1			
Percent solids	0.904			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	7.5	OK	Reported Result (mg/Kg)	7.5

SDG#: JC34136R/ Method 7196	x - concentration	y - response
Batch: GN57224		
Cr+6 ICAL 12/24/16	0	0
Soil	0.01	0.009
(p. 39 of data pkg)	0.05	0.041
	0.1	0.08
	0.3	0.254
	0.5	0.41
	0.8	0.650
	1	0.832

				(p. 39 of data pkg)
AECOM Calculated Offset	-0.0001	OK	Reported Offset	-0.0001
AECOM Slope	0.8248	OK	Reported Slope	0.8248
AECOM Calculated r	0.99986	OK	Reported r	0.99986

LCS calculation	**GP2264-B1**	**P.26,39**		
Background Absorbance	0			
Total absorbance	0.78			
Total absorbance - background	0.78			
Instrument Concentration	0.946			
Sample weight (mg/kg)	0.0025			
Final Volume (L)	0.1			
Dilution Factor	1			
AECOM Calculated LCS Result (mg/Kg)	37.8	OK	Reported Result (mg/Kg)	37.8

%R = Found/True*100	**GP2264-B1**	**P.26,39**		
True Value (mg/kg)	40			
AECOM Calculated %R	94.6	OK, rounding	Reported %R	94.5

MS calculation	**GP2264-S1**	**P.28,39**	**JC34136-2R**	
Background reading	0			
Total absorbance	0.248			
Total absorbance - background	0.248			
Instrument Concentration	0.3007			
Sample weight (mg/kg)	0.00257			
Final Volume (L)	0.1			
Percent solids	0.904			
Dilution Factor	1			
AECOM Calculated MS Result (mg/Kg)	12.9	OK	Reported Result (mg/Kg)	12.9

%R = Found/True*100	**GP2264-S1**	**P.28,39**	**JC34136-2R**	
True Value (mg/kg)	43			
Native concentration (mg/Kg)	0.61			
AECOM%R	28.7	OK, rounding	Reported %R	28.6

Percent Solids	**JC34136-2R**	**P.31**	**135-Z39A-SW-E-4.1-4.6**	
Empty dish weight=	26.43			
Wet weight=	32.17			
Dry weight=	31.62			
AECOM%solids =	90.4	OK	reported %solids=	90.4

Reporting Limit	**JC34136-2R**	**P.10,39**	**135-Z39A-SW-E-4.1-4.6**	
Low Standard	0.01			
Initial weight (mg/kg)	0.0025			
Final volume (L)	0.1			
Percent solids	0.904			
Dilution Factor	1			
Reporting Limit	0.44	OK	Reported RL (mg/Kg)=	0.44

Sample Calculations	**JC34136-2R**	**P.10,39**	**135-Z39A-SW-E-4.1-4.6**	
Background reading	0			
Total absorbance	0.011			
Total absorbance - background	0.011			
Instrument Response	0.013			
Sample weight (mg/kg)	0.00245			
Final Volume (L)	0.1			
Percent solids	0.904			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.61	OK	Reported Result (mg/Kg)	0.61

SDG#: JC34136T/ Method 7196	x - concentration	y - response
Batch: GN58180		
Cr+6 ICAL 1/18/17	0	0
Soil	0.01	0.01
(p. 31 of data pkg)	0.05	0.047
	0.1	0.089
	0.3	0.258
	0.5	0.438
	0.8	0.680
	1	0.852

				(p. 31 of data pkg)
AECOM Calculated Offset	0.0034	OK	Reported Offset	0.0034
AECOM Slope	0.8504	OK	Reported Slope	0.8504
AECOM Calculated r	0.99992	OK	Reported r	0.99992

LCS calculation	**GP2734-B1**	**P.26,31**		
Background Absorbance	0			
Total absorbance	0.745			
Total absorbance - background	0.745			
Instrument Concentration	0.872			
Sample weight (mg/kg)	0.0025			
Final Volume (L)	0.1			
Dilution Factor	1			
AECOM Calculated LCS Result (mg/Kg)	34.9	OK	Reported Result (mg/Kg)	34.9

%R = Found/True*100	**GP2734-B1**	**P.26,31**		
True Value (mg/kg)	40			
AECOM Calculated %R	87.2	OK, rounding	Reported %R	87.3

MS calculation	**GP2734-S1**	**P. 28,31**	**JC34136-2T**	
Background reading	0.006			
Total absorbance	0.308			
Total absorbance - background	0.302			
Instrument Concentration	0.3512			
Sample weight (mg/kg)	0.00253			
Final Volume (L)	0.1			
Percent solids	0.904			
Dilution Factor	1			
AECOM Calculated MS Result (mg/Kg)	15.4	OK	Reported Result (mg/Kg)	15.4

SDG#: JC34136T/ Method 7196 cont'd

%R = Found/True*100	**GP2734-S1**	**P. 28,31**	**JC34136-2T**	
True Value (mg/kg)	43.7			
Native concentration (mg/Kg)	0			
AECOM%R	35.1	OK, rounding	Reported %R	35.2

Percent Solids	**JC34136-2T**	**P.29**	**135-Z39A-SW-E-4.1-4.6**	
Empty dish weight=	26.43			
Wet weight=	32.17			
Dry weight=	31.62			
AECOM%solids =	90.4	OK	reported %solids=	90.4

Reporting Limit	**JC34136-2T**	**P.9,31**	**135-Z39A-SW-E-4.1-4.6**	
Low Standard	0.01			
Initial weight (mg/kg)	0.0025			
Final volume (L)	0.1			
Percent solids	0.904			
Dilution Factor	1			
Reporting Limit	0.44	OK	Reported RL (mg/Kg)=	0.44

Sample Calculations	**JC34136-2T**	**P.9,31**	**135-Z39A-SW-E-4.1-4.6**	
Background reading	0.005			
Total absorbance	0.011			
Total absorbance - background	0.006			
Instrument Response	0.003			
Sample weight (mg/kg)	0.00242			
Final Volume (L)	0.1			
Percent solids	0.904			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.14	OK, Reported as Nondetect	Reported Result (mg/Kg)	0.31 U

DATA VALIDATION REPORT FORM – METALS ANALYSIS

Client Name: PPG Industries	**Project Number:** 60482955.GA.RA.OSS.2016
Site Location: Site 135 Pit Bottom Sampling, Jersey City, NJ	**Project Manager:** Scott Mikaelian
Laboratory: SGS/Accutest, Dayton, NJ	**Type of Validation:** Limited
Laboratory Job No: JC34136A	**Date Checked:** 01/13/2017
Validator: Sharon McKechnie	**Peer:** Mary Kozik

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X			
Field I.D. included?	X			
Laboratory I.D. included?	X			
Did data package sample IDs match sample IDs on COC?	X			
Did electronic data deliverable (EDD) sample IDs match COC sample IDs?	X			
Did data package sample IDs match electronic data deliverable (EDD) sample IDs?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6ºC?	X			
Signed COCs included?	X			
Date of sample collection included?	X			
Date of sample digestion included?	X			
Date of analysis included?	X			
Holding time met QC criteria? (Metals -180 days from sample collection; Mercury - 28 days from sample collection. If HT exceeded by 10 days R all results.	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			

Definitions: MDL - Method Detection Limit; %R - Percent Recovery; RL - Reporting Limit; RPD - Relative Percent Difference; RSD - Relative Standard Deviation :Corr - Correlation Coefficient.

ITEM	YES	NO	N/A	COMMENTS
Sample dilutions?	X			Up to 5X
Initial calibration documentation included in lab package?			X	N/A for Limited Validation
1) Calibrate daily or each time instrument is set up.			X	
2) ICP (6010) -Blank plus 1 standard?			X	
3) Hg (7470/7471) -Blank plus 5 standards?			X	
Initial Calibration Verification Standard (ICV) for ICP (6010) and Initial Calibration Check Standard (ICCS) for Hg (7470/7471) included in lab package?			X	N/A for Limited Validation
1) Analyzed immediately after initial calibration?			X	
2) %R criteria met? (90-110%)			X	
3) Spot check ICV/ICCS results for several analytes.			X	
Continuing Calibration Verification Standard (CCV) for ICP (6010) and Calibration Check Standard (CCS) for Hg (7470/7471) included in Lab Package?			X	N/A for Limited Validation
1) Analyzed immediately after each ICV/ICC/CB and after every 10 samples?			X	
2) CCS and CCV from independent source and at mid- level of calibration curve.			X	
3) %R criteria met? (90-110%R).			X	
4) Spot check CCV/CCS results for several analytes.			X	
Low Calibration Standard (CRI) included in Lab Package?			X	N/A for Limited Validation
1) %R criteria met?			X	
Calibration Blanks			X	N/A for Limited Validation
1) Analyzed after daily calibration and after each ICV/ICC/CCV/CCS and after every 10 samples?			X	
2) Absolute value <3xIDL?			X	
Method Blank Included in Lab Package?	X			
1) Method blank analyzed with each preparation batch or every SDG, or 1/20 samples?	X			
2) Method blank analyzed 1/20 samples	X			
3) MB results nondetect?		X		See Table
4) Negative MB result reported?		X		

ITEM	YES	NO	N/A	COMMENTS
Field Blanks/Equipment Blanks Included in Lab Package?	X			
1) FB/EB result non-detect?		X		See Table
ICP Interference Check Sample (ICS) included in Lab Package?			X	N/A for Limited Validation
1) Analyzed at beginning of analytical run?			X	
2) %R criteria met? (80-120%)			X	
3) Spot check accuracy of %Rs			X	
Matrix Spike/Matrix Spike Duplicate Data Included in Lab Package?	X			JC34136-1A
1) MS/MSD %R (75-125%R) and RPD (20%) criteria met?		X		See table
2) Was a sample spiked at the frequency of 1/batch or 20 samples?	X			
3) Was the MS performed on a site sample?	X			JC34136-1A
4) Was the MS performed on a FB/EB or TB?		X		
Post Digestion Spike			X	N/A for Limited Validation
1) %R criteria met? (75-125%R)			X	
2) Was the spike performed on a FB/EB or TB?			X	
3) Was a sample spiked at the frequency of 1/batch or 20 samples?			X	
Laboratory Duplicate Data Included in Lab Package?		X		
Aqueous - RPD criteria met? (20%)			X	
Soil - RPD criteria met? (35%)			X	
Was a Laboratory Control Sample (LCS) Included in Lab Package?	X			
1) LCS %R criteria met? (80-120%R).	X			
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples?	X			
Serial Dilution			X	N/A for Limited Validation
1) %D (<10%R) criteria met? -			X	
2) Was the frequency 1/batch or 20 samples?			X	
3) Was a site sample used?			X	
4) Was a FB/EB or TB used?			X	

ITEM	YES	NO	N/A	COMMENTS
5) Spot check accuracy of %Ds.			X	
Field Duplicate Data included in Lab Package?		X		
Aqueous - RPD criteria met? (20%)			X	
Soil - RPD criteria met? (35%)			X	
Percent Solids data included in Lab Package?	X			All met criteria no table
1) % Solids criteria (Reg 2 criteria) met? (>/=50%)	X			
Chromium result greater than corresponding hexavalent chromium result where applicable?	X			See Table in hexavalent chromium section

Blanks

Analyte	Result	3X	10X	Sample Actions	Associated Samples
Method Blank	**mg/kg**	**mg/kg**	**mg/kg**		
Calcium	14.5	43.5	145	All >10X MB, Accept	All Soil Samples
Iron	2.4	7.2	24	All >10X MB, Accept	
Sodium	42	126	420	**JC34136-1A, JC34136-2A >3X MB but <10X MB, Estimate (JB).** Rest >10X MB, Accept.	
Zinc	11.7	35.1	117	**JC34136-2A >3X MB but <10X MB, Estimate (JB).** Rest >10X MB, Accept.	
Method Blank	**ug/l**	**ug/l**	**ug/l**		
Sodium	386	1158	3860	>10X MB, Accept	Aqueous EB

Analyte	Result	Result	3X	10X	Sample Actions	Associated Samples
Equipment Blank	**ug/l**	**mg/kg**	**mg/kg**	**mg/kg**		
Magnesium	3220	322	966	3220	**JC34136-3A, JC34136-4A, JC34136-5A >3X EB but <10X EB, Estimate (J).** Rest >10X EB, Accept.	All Soil
Sodium	6630	663	1989	6630	**All soil samples <3X EB, Negate (U) at RL.**	
Zinc	1.3	0.13	0.39	1.3	All >10X EB, Accept	
*Note: A nominal weight of 1g and nominal final volume of 0.10L was used to convert aqueous units (ug/L) to soils units (mg/kg) in the absence of a full data deliverable.						

Matrix Spike 135-Z39A-PB-6.1-6.6 JC34136-1A

Analyte	MS% Recovery	MSD% Recovery	Spiked Sample Concentration (ug/l)	Spike Concentration (ug/l)	4X Amount Spiked (ug/l)	Lower Limit	Upper Limit	Actions
Iron	100.6	233.6	17600	2870	11480	75	125	Spiked sample concentration >4X spike concentration; therefore, not applied for QC.

Matrix Spike

Sample ID	Lab ID	Analyte	MS% Recovery	MSD% Recovery	Lower Limit	Upper Limit	Actions	RPD (%) QC Limit 20%
135-Z39A-PB-6.1-6.6	JC34136-1A	Aluminum	**171.7**	91.3	75	125	**Estimate (J) Undefined Bias**	**20.6**
		Antimony	**65.3**	**69.2**			**Estimate (J) Low Bias**	1.9
		Barium	**176**	94.1			**Estimate (J) Undefined Bias**	**47.2**
		Calcium	**58.3**	**57.5**			**Estimate (J) Low Bias**	1.0
		Lead	**257.4**	94.1			**Estimate (J) Undefined Bias**	**66.6**
		Potassium	112.7	**65.9**			**Estimate (J) Undefined Bias**	**24.5**
		Zinc	**127**	**71.5**			**Estimate (J) Undefined Bias**	**32.7**

DATA VALIDATION REPORT FORM – VOC ANALYSIS

Client Name: PPG Industries	**Project Number:** 60482955.GA.RA.OSS.2016
Site Location: Site 135 Pit Bottom Sampling, Jersey City, NJ	**Project Manager:** Scott Mikaelian
Laboratory: SGS/Accutest, Dayton, NJ	**Type of Validation:** Limited
Laboratory Job No: JC34136A	**Date Checked:** 01/13/2017
Validator: Sharon McKechnie	**Peer:** Mary Kozik

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?		X		See table
Field I.D. included?	X			
Laboratory I.D. included?	X			
Did data package sample IDs match sample IDs on COC?	X			
Did electronic data deliverable (EDD) sample IDs match COC sample IDs?	X			
Did data package sample IDs match electronic data deliverable (EDD) sample IDs?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6ºC?	X			
Signed COCs included?	X			
Date of sample collection included?	X			
Date of analysis included?	X			
Holding time to analysis met criteria? Aqueous (unpreserved) - 7 days from collection to analysis. Aqueous (preserved) - 14 days from collection to analysis. Soils - 14 days from collection to analysis.	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			

Definitions: MDL - Method Detection Limit; %R - Percent Recovery; RL - Reporting Limit; RPD - Relative Percent Difference; RSD - Relative Standard Deviation :Corr - Correlation Coefficient.

ITEM	YES	NO	N/A	COMMENTS
Sample dilutions?		X		No dilutions
Method Blank Included in Lab Package?	X			
1) Method blank analyzed with each preparation batch?	X			
2) Absolute value should not exceed RL.	X			
Trip Blanks/Field Blanks/Equipment Blanks Included in Lab Package?	X			135-FB20161221
1) TB/FB/EB results non-detect?	X			
Surrogate Data Included?	X			
1) Is %R criteria (laboratory criteria) met?	X			
Matrix Spike/Matrix Spike Duplicate Data Included in Lab Package?	X			
1) %R and RPD (laboratory criteria) met?			X	Non-site sample spiked, not applied for QC
2) Was the spike concentration at the same concentration as the LCS?			X	
3) Was a sample spiked at the frequency of 1 per 20 samples?	X			
Laboratory Duplicate Data Included in Lab Package?		X		
1) %RPD (laboratory criteria) met?			X	
Was a Laboratory Control Sample (LCS) Included in Lab Package?	X			
1) LCS %R criteria met? (laboratory criteria)		X		See table
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples?	X			
Field Duplicate Data included in Lab Package?		X		
1) %RPD criteria (Reg 2 criteria) met?			X	
Percent Solids data included in Lab Package?	X			
1) %Solids criteria (Reg 2 criteria) met? (>/=50%)	X			All met criteria, no table

Laboratory Control Samples

LCS ID	Analyte	LCS % Recovery	Lower Limit (%)	Upper Limit (%)	Associated Samples	Action
VC7922-BS (soil)	Freon 113	139	67	136	JC34136-2A, 3A, 5A	Estimate (J/A). All results nondetect, no qualification
VE10411-BS (soil)		156			JC34136-3A	
V1A7143-BS (aqueous)		170	67	159	JC34136-6A	

ND – Not detected

Nondetect Results Exceeding Action Levels

Sample ID	Lab ID	Dilution Factor	Analyte	Result	Detect Flag	Units	DIGWSSL	RDCSRS-GAG
135-Y38A-SW-E-12.0-12.5	JC34136-3A	1	1,1,2,2-TETRACHLOROETHANE	25	N	ug/kg	7	
135-Y38A-SW-E-12.0-12.5	JC34136-3A	1	1,1,2-TRICHLOROETHANE	33	N	ug/kg	20	
135-Y38A-SW-E-12.0-12.5	JC34136-3A	1	1,1-DICHLOROETHYLENE	16	N	ug/kg	8	
135-Y38A-SW-E-12.0-12.5	JC34136-3A	1	1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	50	N	ug/kg	5	
135-Y38A-SW-E-12.0-12.5	JC34136-3A	1	1,2-DIBROMOETHANE(EDB)	25	N	ug/kg	5	8
135-Y38A-SW-E-12.0-12.5	JC34136-3A	1	1,2-DICHLOROETHANE	18	N	ug/kg	5	
135-Y38A-SW-E-12.0-12.5	JC34136-3A	1	1,2-DICHLOROPROPANE	32	N	ug/kg	5	
135-Y38A-SW-E-12.0-12.5	JC34136-3A	1	BENZENE	12	N	ug/kg	5	
135-Y38A-SW-E-12.0-12.5	JC34136-3A	1	BROMODICHLOROMETHANE	16	N	ug/kg	5	
135-Y38A-SW-E-12.0-12.5	JC34136-3A	1	BROMOMETHANE	50	N	ug/kg	40	
135-Y38A-SW-E-12.0-12.5	JC34136-3A	1	CARBON TETRACHLORIDE	17	N	ug/kg	5	
135-Y38A-SW-E-12.0-12.5	JC34136-3A	1	CHLORODIBROMOMETHANE	15	N	ug/kg	5	
135-Y38A-SW-E-12.0-12.5	JC34136-3A	1	CIS-1,3-DICHLOROPROPENE	20	N	ug/kg	5	
135-Y38A-SW-E-12.0-12.5	JC34136-3A	1	DICHLOROMETHANE	100	N	ug/kg	10	
135-Y38A-SW-E-12.0-12.5	JC34136-3A	1	TRANS-1,3-DICHLOROPROPENE	23	N	ug/kg	5	
135-Y38A-SW-E-12.0-12.5	JC34136-3A	1	TRICHLOROETHYLENE	20	N	ug/kg	10	
135-Y38A-SW-E-12.0-12.5	JC34136-3A	1	VINYL CHLORIDE	21	N	ug/kg	5	

DATA VALIDATION REPORT FORM – SVOC ANALYSIS

Client Name: PPG Industries	**Project Number:** 60482955.GA.RA.OSS.2016
Site Location: Site 135 Pit Bottom Sampling, Jersey City, NJ	**Project Manager:** Scott Mikaelian
Laboratory: SGS/Accutest, Dayton, NJ	**Type of Validation:** Limited
Laboratory Job No: JC34136A	**Date Checked:** 01/13/2017
Validator: Sharon McKechnie	**Peer:** Mary Kozik

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X			
Field I.D. included?	X			
Laboratory I.D. included?	X			
Did data package sample IDs match sample IDs on COC?	X			
Did electronic data deliverable (EDD) sample IDs match COC sample IDs?	X			
Did data package sample IDs match electronic data deliverable (EDD) sample IDs?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6ºC?	X			
Signed COCs included?	X			
Date of sample collection included?	X			
Date of sample extraction included?	X			
Date of analysis included?	X			
Holding time to analysis met criteria?	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			

Definitions: MDL - Method Detection Limit; %R - Percent Recovery; RL - Reporting Limit; RPD - Relative Percent Difference; RSD - Relative Standard Deviation :Corr - Correlation Coefficient.

ITEM	YES	NO	N/A	COMMENTS
Sample dilutions?	X			Run #2 JC34136-3A for surrogate %Rs (2X)
Method Blank Included in Lab Package?	X			
1) Method blank analyzed with each preparation batch?	X			
2) Absolute value should not exceed RL.	X			
Trip Blanks/Field Blanks/Equipment Blanks Included in Lab Package?	X			135-FB20161221
1) TB/FB/EB results non-detect?	X			
Surrogate Data Included?	X			
1) Is %R criteria (laboratory criteria) met?		X		See table
Matrix Spike/Matrix Spike Duplicate Data Included in Lab Package?	X			Non site sample spiked. Not applied for QC.
1) %R and RPD (laboratory criteria) met?			X	
2) Was the spike concentration at the same concentration as the LCS?			X	
3) Was a sample spiked at the frequency of 1 per 20 samples?	X			
Was a Laboratory Control Sample (LCS) Included in Lab Package?	X			
1) LCS %R criteria met? (laboratory criteria)	X			All met criteria, no table
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples?	X			
Field Duplicate Data included in Lab Package?		X		
1) %RPD criteria (Reg 2 criteria) met?			X	
Percent Solids data included in Lab Package?	X			
1) %Solids criteria (Reg 2 criteria) met? (>/=50%)	X			All met criteria, no table

Surrogate Recovery 135-Y38A-SW-E-12.0-12.5 (JC34136-3A)

Lab File ID	2,4,6-Tribromophenol (S3)*	Nitrobenzene-d5 (S4)*	2-Fluorobiphenyl (S5)*	Action
6P33338.D	19	25	OK	**Estimate (J/UJ) low bias**
6P33407.D	18	24	OK	**Estimate (J/UJ) low bias**
2P65629.D	OK	4	11	Confirmation run for surrogates, no results reported from this run.
	*S3 Limits:24-140%	*S4 Limits:26-122%	*S5 Limits: 36-112%	

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Data Validation Report

Project:	Site 135 Pit Bottom Sampling	
Laboratory:	SGS/Accutest, Dayton, NJ	
Laboratory Job No.:	JC35023 and JC35023R	
Analysis/Method:	Hexavalent Chromium SW846 3060A/7196A/7199	
Validation Level:	Full	
Site Location/Address:	PPG Site 135 - Garfield Avenue, Jersey City, NJ	
AECOM Project No:	60482955.GA.RA.OSS.2016	
Prepared by:	Sharon McKechnie/AECOM	Completed on: 01/24/2017
Reviewed by:	Mary Kozik/AECOM	File Name:JC35023_R_2017_01_24_DV Report-F

Introduction

The data were reviewed in accordance with the FSP-QAPP and the following NJDEP validation Standard Operating Procedure (SOP):

- NJDEP Office of Data Quality SOP 5.A.10, Rev 3 (September 2009), SOP for Analytical Data Validation of Hexavalent Chromium - for USEPA SW-846 Method 3060A, USEPA SW-846 Method 7196A/7199.

The results of quality control data analyzed with site samples were used to assess the overall reliability of the data. The following qualifiers were used to identify data quality issues:

U: Indicates the analyte was not detected in the sample above the sample reporting limit.

J: Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

UJ: Indicates the analyte was not detected above the reporting limit and the reporting limit was approximate.

UB: The analyte concentration is less than or equal to three (3) times the concentration in the associated method/prep blank. The presence of the analyte in the sample is negated (UB) due to laboratory contamination.

JB: The analyte concentration is greater than three (3) times, but less than or equal to ten (10) times the concentration in the associated method/prep blank. The presence of that analyte in the sample is considered "real". The concentration is quantitatively qualified (JB) due to method blank contamination.

R: The sample result was rejected due to serious deficiencies; the presence or absence of the analyte could not be confirmed.

RA: The sample result was rejected but is still considered usable.

Sample Information

The samples listed below were collected by AECOM on January 06, 2017 as part of the Site 135 Pit Bottom sampling at PPG Site 135 - Garfield Avenue, Jersey City, New Jersey. Only the samples and parameter listed below were validated.

Field ID	Laboratory ID	Matrix	Fraction
135-FB20170107 (Equipment Blank)	JC35023-16	Aqueous	Hexavalent Chromium
135-Z40A-PB-14.0-14.5	JC35023-1,1R	Soil	Hexavalent Chromium
135-Z40A-SW-E-10.0-10.5	JC35023-10,10R	Soil	Hexavalent Chromium
135-Z40A-SW-E-12.0-12.5	JC35023-9,9R	Soil	Hexavalent Chromium
135-Z40A-SW-E-6.0-6.5	JC35023-12,12R	Soil	Hexavalent Chromium
135-Z40A-SW-E-8.0-8.5	JC35023-11,11R	Soil	Hexavalent Chromium
135-Z40A-SW-N-10.0-10.5	JC35023-14,14R	Soil	Hexavalent Chromium
135-Z40A-SW-N-12.0-12.5	JC35023-13,13R	Soil	Hexavalent Chromium
135-Z40A-SW-N-8.0-8.5	JC35023-15,15R	Soil	Hexavalent Chromium
135-Z40A-SW-S-10.0-10.5	JC35023-3,3R	Soil	Hexavalent Chromium
135-Z40A-SW-S-12.0-12.5	JC35023-2,2R	Soil	Hexavalent Chromium
135-Z40A-SW-S-6.0-6.5	JC35023-5,5R	Soil	Hexavalent Chromium
135-Z40A-SW-S-8.0-8.5	JC35023-4,4R	Soil	Hexavalent Chromium
135-Z40A-SW-W-10.0-10.5	JC35023-7,7R	Soil	Hexavalent Chromium
135-Z40A-SW-W-12.0-12.5	JC35023-6,6R	Soil	Hexavalent Chromium
135-Z40A-SW-W-8.0-8.5	JC35023-8,8R	Soil	Hexavalent Chromium

The samples were collected following the procedures detailed in the Work Order for Garfield Avenue Remedial Action (GARA) at PPG Site 135 - Garfield Avenue, Jersey City, New Jersey and the Field Sampling Plan/Quality Assurance Project Plan for Non-Residential and Residential Chromium Sites Hudson County, New Jersey (December 2011).

General Comments

The data package was complete. Quality control (QC) issues identified during validation are discussed below. Refer to the Target Analyte Summary Hit List(s) in Attachment A for a listing of all detected results, qualified results, and associated qualifications, where applicable. The nonconformances for each section discussed below are presented in Attachment B.

Calibration Blanks

<u>7196</u>

Negative drift for hexavalent chromium was detected in all continuing calibration blanks (CCBs) associated with the aqueous EB sample 135-FB20170107 (JC35023-16) in this SDG, at greater than the method detection limit (MDL), but less than the reporting limit (RL). Therefore, the nondetect result in the EB was qualified as estimated (UJ).

7199

Hexavalent chromium was detected in the CCB associated with soil sample 135-Z40A-SW-S-6.0-6.5 (JC35023-5R), at greater than the MDL, but less than the RL. However, the result for sample 135-Z40A-SW-S-6.0-6.5 was reported from the initial analysis and no qualifications were applied.

Refer to the Target Analyte Summary Hit List(s) in Attachment A for a listing of all results qualified on the basis of CCB contamination. Refer to the tables in Appendix B for a listing of 7196 and 7199 CCB results.

MS Results

Sample 135-Z40A-SW-S-6.0-6.5 (JC35023-5) was selected for the matrix spike (MS) analysis associated with the samples in this SDG. The soluble and insoluble MS recoveries from the initial batch by Method 7196 were 39.9% and 99.2%, respectively. The soluble MS recovery failed to meet the quality control (QC) criteria of 75-125%, and was less than 50%. The post digestion spike (PDS) recovery was 65%, and after pH adjustment was 67%, which did not meet the PDS criteria of 85-115%.

Based on the low soluble MS recovery of less than 50%, the samples were reanalyzed using Method 7199. The soluble and insoluble MS results from the reanalysis were 23.7% and 77.0%, respectively. The soluble MS recovery failed to meet the QC criteria of 75-125%, and was less than 50%. The PDS recovery was 97%, which met the PDS criteria of 85-115%.

Since the initial and reanalysis soluble matrix spikes and PDS failed to meet QC criteria, additional parameters were analyzed to determine if matrix interference could be the cause for the poor matrix spike recoveries. All samples included in this sample data group (SDG) were tested for pH and oxidation-reduction potential (ORP), and plotted on an Eh/pH phase diagram. From this chart, the source sample for the MS analysis was plotted above the phase change line, indicating an oxidizing potential within the sample matrix, which suggests the sample matrix environment is capable of supporting hexavalent chromium. To confirm the oxidizing/reducing potential within the sample matrix, the additional ancillary parameters ferrous iron, sulfide screen, and total organic carbon (TOC) were analyzed for the matrix spike source sample. The sulfide screen was reported as nondetect, indicating no reducing agents within the sample matrix; however, the ferrous iron (0.21%) and the TOC results (72,400 mg/kg) were positive, indicating potential reducing agents within the sample matrix.

The soluble MS recoveries did not meet the MS QC requirements, but both insoluble MS recoveries were greater than 50%; therefore, the reported hexavalent chromium results for the associated samples were qualified as estimated (J) due to the low soluble MS recoveries. The highest detected hexavalent chromium result or the nondetect hexavalent chromium result with the lowest RL was reported for each soil sample.

No action was taken on the low initial analysis PDS recovery since the reanalysis PDS recovery met QC criteria.

Laboratory Duplicate Precision

The laboratory duplicate (LD) relative percent difference (RPD) for hexavalent chromium in the initial analysis of sample 135-Z40A-SW-S-6.0-6.5 (JC35023-5) exceeded the QC criteria of 20% for results greater than 4 times the RL. Therefore, all hexavalent chromium soil results reported from the initial analysis were qualified as estimated (J).

Refer to the Target Analyte Summary Hit List(s) in Attachment A for a listing of all results qualified on the basis of LD contamination. Refer to the tables in Appendix B for a listing of LD results.

Data Quality and Usability

In general, these data appear to be valid and may be used for decision-making purposes. No data were rejected. Qualified and detected results are presented in Attachments A and B.

The hexavalent chromium soil results in this SDG are usable as estimated values with the potential for low bias due to low MS recoveries, and since the MS sample matrix appears to be reducing based on the Eh-pH plot and the presence of TOC and ferrous iron. The highest detected result between the initial and reanalysis was reported for each soil sample.

Additional issues noted:

- All reported hexavalent chromium soil results reported from the initial analysis were qualified as estimated due to laboratory duplicate imprecision.
- The nondetect result in the EB was qualified as estimated due to laboratory blank contamination.

ATTACHMENTS

Attachment A: Target Analyte Summary Hit List(s)

Attachment B: Data Validation Report Form

Attachment A

Target Analyte Summary Hit List(s)

Soil Target Analyte Summary Hit List (Hexavalent Chromium)

Site Name Site 135 Pit Bottom Sampling
Sampling Date January 6, 2017
Lab Name/ID SGS/Accutest, Dayton, NJ
SDG No JC35023 and JC35023R
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID 135-FB20170107

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-FB20170107 (**mg/l**)	JC35023-16	CHROMIUM (HEXAVALENT)	U	U	U	0.010	Qualify	3
135-Z40A-PB-14.0-14.5	JC35023-1	CHROMIUM (HEXAVALENT)	U	1.4	1.4	0.51	Qualify	1,2
135-Z40A-SW-E-10.0-10.5	JC35023-10	CHROMIUM (HEXAVALENT)	U	1.4	1.4	0.50	Qualify	1,2
135-Z40A-SW-E-12.0-12.5	JC35023-9	CHROMIUM (HEXAVALENT)	U	0.46B	0.46	0.48	Qualify	1,2,4
135-Z40A-SW-E-6.0-6.5	JC35023-12	CHROMIUM (HEXAVALENT)	U	1.8	1.8	0.52	Qualify	1,2
135-Z40A-SW-E-8.0-8.5	JC35023-11	CHROMIUM (HEXAVALENT)	U	1.6	1.6	0.51	Qualify	1,2
135-Z40A-SW-N-10.0-10.5	JC35023-14	CHROMIUM (HEXAVALENT)	U	1.5	1.5	0.58	Qualify	1,2
135-Z40A-SW-N-12.0-12.5	JC35023-13	CHROMIUM (HEXAVALENT)	U	0.51B	0.51	0.62	Qualify	1,2,4
135-Z40A-SW-N-8.0-8.5	JC35023-15	CHROMIUM (HEXAVALENT)	U	2.0	2.0	0.57	Qualify	1,2
135-Z40A-SW-S-10.0-10.5	JC35023-3	CHROMIUM (HEXAVALENT)	U	0.47B	0.47	0.55	Qualify	1,2,4
135-Z40A-SW-S-12.0-12.5	JC35023-2	CHROMIUM (HEXAVALENT)	U	1.4	1.4	0.58	Qualify	1,2
135-Z40A-SW-S-6.0-6.5	JC35023-5	CHROMIUM (HEXAVALENT)	U	2.8	2.8	0.51	Qualify	1,2
135-Z40A-SW-S-8.0-8.5	JC35023-4	CHROMIUM (HEXAVALENT)	U	14.2	14.2	0.51	Qualify	1,2
135-Z40A-SW-W-10.0-10.5	JC35023-7	CHROMIUM (HEXAVALENT)	U	2.5	2.5	0.52	Qualify	1,2
135-Z40A-SW-W-12.0-12.5	JC35023-6	CHROMIUM (HEXAVALENT)	U	1.2	1.2	0.55	Qualify	1,2
135-Z40A-SW-W-8.0-8.5	JC35023-8	CHROMIUM (HEXAVALENT)	U	2.7	2.7	0.52	Qualify	1,2

Note: A “U” under Method Blank column indicates a nondetect result.
A “U” under the Laboratory Sample Result and Validation Sample Result columns indicates a nondetect result at the RL

NJDEP Laboratory Footnote

1. The sample result was qualified because the MS recoveries were outside the QC criteria.
2. The sample result was qualified because the laboratory duplicate did not meet QC criteria.
3. The result was qualified due to negative drift <RL in the CCB.
4. The reported result was greater than the MDL but less than the RL and qualified as estimated by the laboratory.

Attachment B

Data Validation Report Form

Client Name: PPG Industries	**Project Number:** 60482955.GA.RA.OSS.2016
Site Location: Site 135 Pit Bottom Sampling, Jersey City, NJ	**Project Manager:** Scott Mikaelian
Laboratory: SGS/Accutest, Dayton, NJ	**Type of Validation:** Full
Laboratory Job No: JC35023 and JC35023R	**Date Checked:** 01/24/2017
Validator: Sharon McKechnie	**Peer:** Mary Kozik

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X			
Field I.D. included?	X			
Laboratory I.D. included?	X			
Did data package sample IDs match sample IDs on COC?	X			
Did electronic data deliverable (EDD) sample IDs match COC sample IDs?	X			
Did data package sample IDs match electronic data deliverable (EDD) sample IDs?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6ºC?	X			
Signed COCs included?	X			
Date of sample collection included?	X			
Date of sample digestion included?	X			
Holding time to digestion met criteria? (Soils -30 days from collection to digestion.)	X			
Date of analysis included?	X			
Holding time to analysis met criteria? (Soils -168 hours from digestion to analysis; Aqueous - 24 hours from collection to analysis.	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			

Definitions: MDL - Method Detection Limit; %R - Percent Recovery; RL - Reporting Limit; RPD - Relative Percent Difference; RSD - Relative Standard Deviation :Corr - Correlation Coefficient.

ITEM	YES	NO	N/A	COMMENTS
Initial calibration documentation included in lab package?	X			
1) Blank plus 4 standards (7196A) or blank plus 3 standards (7199)	X			
2) Correlation coefficient of >0.995 (7196A) or >0.999 (7199)	X			
3) Calibrate daily or each time instrument is set up.	X			
Calibration Check Standard (CCS) for 7196A and Quality Control Sample (QCS) for 7199 Included in Lab Package?	X			
1) %R criteria met? (90 - 110%)	X			
2) Correct frequency of one per every 10 samples	X			
3) CCS and QCS from independent source and at mid- level of calibration curve	X			
Calibration Blanks	X			
1) Analyzed prior to initial calibration standards and after each CCS/QCS?	X			
2) Absolute value should not exceed MDL.	X*			*Aqueous CCB neg drift >MDL. See Table GN57897-CCB1 >MDL. See Table
Method Blank, Field Blanks and/or Equipment Blanks Included in Lab Package?	X			
1) Method blank analyzed with each preparation batch?	X			
2) Absolute value should not exceed MDL.	X			
Eh and pH Data	X			
1) Eh and pH data was included and plotted for all samples?	X			
Soluble Matrix Spike Data Included in Lab Package?	X			
1) Soluble Matrix %R criteria met? (75-125%R).		X		See table
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?		X		Initial spiked at 49.4 mg/kg and rerun spiked at 50 mg/kg. The data was not affected.
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Insoluble Matrix Spike Data Included in Lab Package?	X			
1) Insoluble Matrix %R criteria met? (75-125%R).	X			See table
2) Was the spike concentration around 400 to 800 mg/Kg?		X		Initial spiked at 1120 mg/kg and rerun spiked at 1200 mg/kg. The data was not affected.
Post Digestion Spike	X			
1) Post Digestion Spike %R criteria met? (85-115%R).		X		See Table.

ITEM	YES	NO	N/A	COMMENTS
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?	X			
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Sample Duplicate Data Included in Lab Package?	X			
1) RPD criteria met? (RPD < 20%) if both results are ≥4x RL or control limit of± RL if both results are <4xRL.		X		See Table
2) Was a sample duplicate analyzed at the frequency of 1 per batch or 20 samples?	X			
Was a Laboratory Control Sample (LCS) Included in Lab Package?	X			
1) %R criteria met? (80-120%R).	X			
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples?	X			
Were any Field Duplicate samples submitted with this SDG?		X		
1) RPD criteria met? (RPD < 20%) if both results are ≥4x RL or control limit of± RL if both results are <4xRL.			X	
Were all sample quantitation and reporting requirements met?	X			
1) Were all solid samples reported with percent solids > 50%?	X			All met criteria, no table
2) Were any samples analyzed or reported with dilutions?		X		No dilutions
Miscellaneous Items	X			
1) For soils by 7196A, was the pH within a range of 7.0-8.0?	X			
2) For soils by 7199, was the pH within a range of 9.0-9.5?	X			
3) For aqueous by 7196A, was the pH with a range of 1.5-2.5?	X			
4) For soils (3060A), was the digestion temperature 90-95C for at least 60 minutes?	X			
5) For 7199, was each sample injected twice and was the RPD ≤20?	X			See Table
Hexavalent chromium result <chromium result?	X			Chromium reported in JC35023A

Blanks

Method	7199 CCB ID	Result (mg/l)	RL	MDL	Associated Samples	Actions
7196	All Aqueous CCBs	-0.0054	0.01	0.0039	JC35023-16	**Estimate (UJ)**
7199	GN57897-CCB1	0.0031	0.01	0.0028	JC35023-5R	None since result reported from 7196 run

Matrix Spikes

Sample ID	Lab ID	Analyte	Matrix Spike	% Recovery	Lower Limit	Upper Limit	PDS%/pH Adj PDS	PDS Limits
135-Z40A-SW-S-6.0-6.5	JC35023-5	CHROMIUM (HEXAVALENT)	Soluble	39.9	75	125	65/67	85-115
135-Z40A-SW-S-6.0-6.5	JC35023-5	CHROMIUM (HEXAVALENT)	Insoluble	99.2	75	125		
135-Z40A-SW-S-6.0-6.5	JC35023-5R	CHROMIUM (HEXAVALENT)	Soluble	23.7	75	125	97/NA	85-115
135-Z40A-SW-S-6.0-6.5	JC35023-5R	CHROMIUM (HEXAVALENT)	Insoluble	77.0	75	125		

Lab Duplicates

Sample ID	Lab ID	Analyte	Sample Result	Duplicate Result	QL	Units	RPD (%)	Action
135-Z40A-SW-S-6.0-6.5	JC35023-5	CHROMIUM (HEXAVALENT)	2.8	4.4	0.51	mg/kg	44.4	**Both >4X RL, Estimate (J)**
135-Z40A-SW-S-6.0-6.5	JC35023-5R	CHROMIUM (HEXAVALENT)	0.97	1.3	0.52	mg/kg	29.1	Both <4X RL, Absolute Difference 0.33<RL, Accept

SDG#: JC35023/ Method 7196	x - concentration	y - response
Batch: GN57761		
Cr+6 ICAL 1/9/17	0	0
Soil	0.01	0.009
(p. 74 of data pkg)	0.05	0.041
	0.1	0.082
	0.3	0.234
	0.5	0.42
	0.8	0.651
	1	0.835

				(p. 74 of data pkg)
AECOM Calculated Offset	-0.0020	OK	Reported Offset	-0.0020
AECOM Slope	0.8290	OK	Reported Slope	0.8290
AECOM Calculated r	0.99972	OK	Reported r	0.99972

LCS calculation	**GP2553-B1**	**P. 55,74**		
Background Absorbance	0			
Total absorbance	0.734			
Total absorbance - background	0.734			
Instrument Concentration	0.888			
Sample weight (mg/kg)	0.0025			
Final Volume (L)	0.1			
Dilution Factor	1			
AECOM Calculated LCS Result (mg/Kg)	35.5	OK	Reported Result (mg/Kg)	35.5

%R = Found/True*100	**GP2553-B1**	**P. 55,74**		
True Value (mg/kg)	40			
AECOM Calculated %R	88.8	OK	Reported %R	88.8

MS calculation	**GP2553-S1**	**P. 57,74**	**JC35023-5**	
Background reading	0.035			
Total absorbance	0.411			
Total absorbance - background	0.376			
Instrument Concentration	0.4560			
Sample weight (mg/kg)	0.00257			
Final Volume (L)	0.1			
Percent solids	0.788			
Dilution Factor	1			
AECOM Calculated MS Result (mg/Kg)	22.5	OK	Reported Result (mg/Kg)	22.5

%R = Found/True*100	**GP2553-S1**	**P. 57,74**	**JC35023-5**	
True Value (mg/kg)	49.4			
Native concentration (mg/Kg)	2.8			
AECOM%R	39.9	OK	Reported %R	39.9

Percent Solids	**JC35023-5**	**P. 58**	**135-Z40A-SW-S-6.0-6.5**	
Empty dish weight=	24.04			
Wet weight=	32.83			
Dry weight=	30.97			
AECOM %solids =	78.8	OK	Reported %solids=	78.8

Reporting Limit	**JC35023-5**	**P. 15,74**	**135-Z40A-SW-S-6.0-6.5**	
Low Standard	0.01			
Initial weight (mg/kg)	0.0025			
Final volume (L)	0.1			
Percent solids	0.788			
Dilution Factor	1			
Reporting Limit	0.51	OK	Reported RL (mg/Kg)=	0.51

Sample Calculations	**JC35023-5**	**P. 15,74**	**135-Z40A-SW-S-6.0-6.5**	
Background reading	0.109			
Total absorbance	0.153			
Total absorbance - background	0.044			
Instrument Response	0.055			
Sample weight (mg/kg)	0.00249			
Final Volume (L)	0.1			
Percent solids	0.788			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	2.8	OK	Reported Result (mg/Kg)	2.8

SDG: JC35023R/ Method 7199 **Batch GN57897**	x - concentration	y - response (area) mAU*min	
Cr+6 ICAL 01/11/17	0.00	0	STDA
Soil	0.005	0.000042	STDB
(p. 78-84 of data package)	0.05	0.000350	STDC
	0.1	0.000705	STDD
	0.5	0.003394	STDE

			(p. 78-84 of data package)	
AECOM Calculated Offset	0.0000	OK	Reported Offset	0.0000
AECOM Slope	0.0068	OK	Reported Slope	0.0068
AECOM Calculated r	0.999974	OK, rounding	Reported r	0.999882

LCS calculation	**GP2583-B1**	**P. 50,90**		
Highest replicate response (AREA, mAU*min)	0.00162			
Instrument Concentration (ug/L)	0.238			
Sample weight	0.0025			
Percent solids	1			
Dilution Factor	4			
AECOM Calculated LCS Result (mg/Kg)	38.0	OK, rounding	Reported Result (mg/Kg)	38.1
%R = Found/True*100	**GP2583-B1**	**P. 50,90**		
True Value (mg/kg)	40			
AECOM Calculated %R	95.0	OK, rounding	Reported %R	95.3

MS calculated on another curve

Percent Solids	**JC35023-5R**	**P. 62**	**135-Z40A-SW-S-6.0-6.5**	
Empty dish weight=	24.04			
Wet weight=	32.83			
Dry weight=	30.97			
AECOM %solids =	78.8	OK	Reported %solids=	78.8

Reporting limit	**JC35023-5R**	**P. 14**	**135-Z40A-SW-S-6.0-6.5**	
Low Standard	0.01			
Initial weight (g)	0.00242			
Final volume (L)	0.1			
Percent solids	0.788			
Dilution Factor	1			
Reporting Limit	0.52	OK	Reported RL (mg/Kg)=	0.52

Sample Calculations	**JC35023-5R**	**P.14,97**	**135-Z40A-SW-S-6.0-6.5**	
Background reading from highest response	0			
Instrument Response highest response	0.000126			
Total response for replicate 1	0.000126			
Instrument Response (mg/L)	0.017			
Sample weight (mg)	0.00242			
Final Volume (L)	0.1			
Percent solids	0.788			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.89	OK, rounding	Reported Result (mg/Kg)	0.97

SDG: JC35023R/ Method 7199 **Batch GN57897**	x - concentration	y - response (area) mAU*min	
Cr+6 ICAL 01/12/17	0.00	0	STDA
Soil	0.005	0.000043	STDB
(p. 102-108 of data package)	0.05	0.000349	STDC
	0.1	0.000712	STDD
	0.5	0.003488	STDE

			(p. 102-108 of data package)	
AECOM Calculated Offset	0.0000	OK	Reported Offset	0.0000
AECOM Slope	0.0070	OK	Reported Slope	0.0070
AECOM Calculated r	0.999991	OK, rounding	Reported r	0.999964

MS calculation	**GP2467-S1**	**P. 52,114**	**JC35023-5R**	
Highest replicate response (mAU*min)	0.001787			
Instrument Concentration (ug/L)	0.2557			
Sample weight	0.00254			
Percent solids	0.764			
Dilution Factor	1			
AECOM Calculated MS Result (mg/Kg)	13.2	OK, rounding	Reported Result (mg/Kg)	12.8

%R = Found/True*100	**GP2467-S1**	**P. 52,114**	**JC35023-5R**	
True Value (mg/kg)	50			
Native concentration (mg/Kg)	0.97			
%R	24.4	OK, rounding	Reported %R	23.7

Percent Solids	**JC35023-8R**	**P. 63**	**135-Z40A-SW-W-8.0-8.5**	
Empty dish weight=	18.71			
Wet weight=	25.70			
Dry weight=	24.05			
AECOM %solids =	76.4	OK	Reported %solids=	76.4

Reporting limit	**JC35023-8R**	**P. 17**	**135-Z40A-SW-W-8.0-8.5**	
Low Standard	0.01			
Initial weight (g)	0.00252			
Final volume (L)	0.1			
Percent solids	0.764			
Dilution Factor	1			
Reporting Limit	0.52	OK	Reported RL (mg/Kg)=	0.52

Sample Calculations	**JC35023-8R**	**P.17,97**	**135-Z40A-SW-W-8.0-8.5**	
Background reading from highest response	0			
Instrument Response highest response	0.000267			
Total response for replicate 1	0.000267			
Instrument Response (mg/L)	0.038			
Sample weight (mg)	0.00252			
Final Volume (L)	0.1			
Percent solids	0.764			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	1.95	OK, rounding	Reported Result (mg/Kg)	2.0

7199 Replicate RPDs

Sample ID	Rep 1 (ppm)	Rep 2 (ppm)	RPD%	RPD Criteria ≤20
JC35023-1R	ND	ND	NC	Both ND, Accept
JC35023-2R	0.00557	0.00474	16.1%	<20%, Accept
JC35023-3R	ND	ND	NC	Both ND, Accept
JC35023-4R	0.19069	0.20429	6.9%	<20%, Accept
JC35023-5R	0.01856	0.01822	1.8%	<20%, Accept
JC35023-6R	ND	ND	NC	Both ND, Accept
JC35023-7R	ND	ND	NC	Both ND, Accept
JC35023-8R	0.03769	0.03821	1.4%	<20%, Accept
JC35023-9R	ND	ND	NC	Both ND, Accept
JC35023-10R	0.00497	0.00506	1.8%	<20%, Accept
JC35023-11R	ND	ND	NC	Both ND, Accept
JC35023-12R	ND	ND	NC	Both ND, Accept
JC35023-13R	ND	ND	NC	Both ND, Accept
JC35023-14R	ND	ND	NC	Both ND, Accept

NC - Not calculable

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Data Validation Report

Project:	Site 135 South Pit Bottom
Laboratory:	SGS/Accutest, Dayton, NJ
Laboratory Job No.:	JC35023A
Analysis/Method:	Volatile Organic Compounds (VOCs) by GCMS/SW-846 8260C Semivolatile Organic Compounds (SVOCs) by GCMS/SW-846 8270D TAL Metals SW-846 3010A/3050B/6010C/7470A/7471B
Validation Level:	Limited
Site Location/Address:	PPG Site 135 - Garfield Avenue, Jersey City, NJ
AECOM Project No:	60482955.GA.RA.OSS.2016
Prepared by: Charlene Livingston Flint /AECOM	Completed on: 01/23/2017
Reviewed by: Sharon McKechnie /AECOM	File Name : JC35023A_2017-01-23_DVReport_F

Introduction

The data were reviewed in accordance with the FSP-QAPP and the following NJDEP and /or Region 2 validation Standard Operating Procedure(s) (SOP):

- NJDEP Office of Data Quality SOP 5.A.16, Rev 1 (May 2002), Quality Assurance Data Validation of Analytical Deliverables for Inorganics (based on USEPA SW-846 Methods);
- ICP-AES Data Validation, SOP No. HW-3a Revision 0 (July 2015);
- Mercury and Cyanide Data Validation, SOP No. HW-3c Revision 0 (July 2015);
- Volatile Organic Compounds By Gas Chromatography/Mass Spectrometry SW-846 Method 8260B, SOP No. HW-33A, Revision 0;
- Semivolatile Data Validation SOP No. HW-35A Revision 0 (June 2015).

The results of quality control data analyzed with site samples were used to assess the overall reliability of the data. The following qualifiers were used to identify data quality issues:

U: Indicates the analyte was not detected in the sample above the sample reporting limit.

J: Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

UJ: Indicates the analyte was not detected above the reporting limit and the reporting limit was approximate.

UB: The analyte concentration is less than or equal to three (3) times the concentration in the associated method/prep blank. The presence of the analyte in the sample is negated (UB) due to laboratory contamination.

JB: The analyte concentration is greater than three (3) times, but less than or equal to ten (10) times the concentration in the associated method/prep blank. The presence of that

analyte in the sample is considered "real". The concentration is quantitatively qualified (JB) due to method blank contamination.

R: The sample result was rejected due to serious deficiencies; the presence or absence of the analyte could not be confirmed.

RA: The sample result was rejected due to NJ specific data validation QC requirements; however, the result is usable for project objectives. Refer to the Data Quality and Usability section in this data validation report for further discussion.

Sample Information

The samples listed below were collected by AECOM on January 6, 2017 as part of the Site 135 South Pit Bottom at PPG Site 135 - Garfield Avenue, Jersey City, New Jersey. Only the samples and parameters listed below were validated.

Field ID	Laboratory ID	Matrix	Fraction
135-Z40A-PB-14.0-14.5	JC35023-1A	Soil	Mercury, Metals, SVOCs and VOCs
135-Z40A-SW-S-12.0-12.5	JC35023-2A	Soil	Mercury, Metals, SVOCs and VOCs
135-Z40A-SW-S-10.0-10.5	JC35023-3A	Soil	Mercury, Metals, SVOCs and VOCs
135-Z40A-SW-S-8.0-8.5	JC35023-4A	Soil	Mercury, Metals, SVOCs and VOCs
135-Z40A-SW-S-6.0-6.5	JC35023-5A	Soil	Mercury, Metals, SVOCs and VOCs
135-Z40A-SW-W-12.0-12.5	JC35023-6A	Soil	Mercury, Metals, SVOCs and VOCs
135-Z40A-SW-W-10.0-10.5	JC35023-7A	Soil	Mercury, Metals, SVOCs and VOCs
135-Z40A-SW-W-8.0-8.5	JC35023-8A	Soil	Mercury, Metals, SVOCs and VOCs
135-Z40A-SW-E-12.0-12.5	JC35023-9A	Soil	Mercury, Metals, SVOCs and VOCs
135-Z40A-SW-E-10.0-10.5	JC35023-10A	Soil	Mercury, Metals, SVOCs and VOCs
135-Z40A-SW-E-8.0-8.5	JC35023-11A	Soil	Mercury, Metals, SVOCs and VOCs
135-Z40A-SW-E-6.0-6.5	JC35023-12A	Soil	Mercury, Metals, SVOCs and VOCs
135-Z40A-SW-N-12.0-12.5	JC35023-13A	Soil	Mercury, Metals, SVOCs and VOCs
135-Z40A-SW-N-10.0-10.5	JC35023-14A	Soil	Mercury, Metals, SVOCs and VOCs
135-Z40A-SW-N-8.0-8.5	JC35023-15A	Soil	Mercury, Metals, SVOCs and VOCs
135-FB20170107 (Equipment Blank)	JC35023-16A	Aqueous	Mercury, Metals, SVOCs and VOCs

The samples were collected following the procedures detailed in the Work Order for Garfield Avenue Remedial Action (GARA) at PPG Site 135 - Garfield Avenue, Jersey City, NJ and the Field Sampling Plan/Quality Assurance Project Plan for Non-Residential and Residential Chromium Sites Hudson County, New Jersey (December 2011).

General Comments

The data package was complete. Quality control (QC) issues identified during validation are discussed below. Refer to the Target Analyte Summary Hitlist(s) in Attachment A for a listing of all detected results, qualified results, and associated qualifications, where applicable. The nonconformances for each section discussed below are presented in Attachment B.

TAL Metals

Laboratory Blanks/Equipment Blanks

Barium, beryllium, calcium, chromium, manganese, nickel, sodium, thallium, zinc and mercury were detected in the aqueous method blanks (MB) MP98001 and MP98027, associated with the aqueous equipment blank (EB) sample 135-FB20170107 (JC35023-16A).

Thallium was reported with negative drift in the method blank MP98001.Thallium was nondetect in the associated EB sample 135-FB20170107; therefore, the result was estimated (UJ).

Zinc and mercury were detected in the EB sample at a concentration less than three times the amount in the MB; therefore, zinc and mercury were negated (UB) in the EB sample 135-FB20170107. All other compounds were detected at concentrations greater than ten times the amount in the method blank; therefore, no qualifications were made for these compounds in the EB.

The soil MB MP97997, associated with all of the soil samples in this SDG, reported aluminum, arsenic, beryllium, calcium, chromium, iron, manganese and sodium. All of the associated soil samples reported these compounds at concentrations greater than ten times the amount in the MB; therefore, no qualifications were made.

Refer to the Target Analyte Summary Hit List(s) in Attachment A for a listing of all results qualified on the basis of aqueous MB contamination. Refer to the nonconformance tables in Appendix B for a listing of MB and EB results and associated qualification actions.

Matrix Spike

Sample 135-Z40A-PB-14.0-14.5 (JC35023-1A) was analyzed as a matrix spike/matrix spike duplicate (MS/MSD) in this SDG.

The MS/MSD recoveries (%R) for antimony were below the QC limits; therefore, antimony was qualified as estimated (UJ) in sample 135-Z40A-PB-14.0-14.5 with a possible low bias.

The recoveries of aluminum, calcium, magnesium, manganese, potassium and zinc exceeded the QC limits in the MS/MSD; therefore, these compounds were estimated (J) in sample 135-Z40A-PB-14.0-14.5 with a high bias.

The relative percent difference (%RPD) for calcium exceeded the QC limit; therefore, calcium was estimated (J) in sample 135-Z40A-PB-14.0-14.5 due to poor MS/MSD precision.

The MS recovery for iron exceeded the %R but due to the low spike amount vs the amount in the sample, no qualifications were made.

Sample Results

Reported results (flagged B by the laboratory) that were less than the reporting limit (RL) but greater than or equal to the method detection limit (MDL) are approximate values and have been qualified as estimated (J).

VOCs

Laboratory Spike (LCS)

The LCS VE10421-BS, associated with the soil sample 135-Z40A-SW-E-8.0-8.5 (JC35023-11A), exceeded the QC %R limits for Freon 113. Sample 135-Z40A-SW-E-8.0-8.5 was nondetect for Freon 113; therefore, no qualifications were made.

The LCS V2A7405-BS, associated with the EB 135-FB2017017, exceeded the %R limits for 4-methyl-2-pentanone. The EB was nondetect for 4-methyl-2-pentanone; therefore, no qualifications were made.

Sample Results

The nondetect results for several VOC compounds in this data set exceeded the NJDEP DIGWSSL and/or RDCSRS action levels; therefore, the nondetect results may not meet project objectives. Refer to the nonconformance tables in Appendix B for a listing of results exceeding the NJDEP DIGWSSL and/or RDCSRS criteria.

Reported results, (flagged J by the laboratory) that were less than the RL but greater than or equal to the MDL are approximate values and have been qualified as estimated.

SVOCs

Matrix Spike/ Matrix Spike Duplicate (MS/MSD)

Sample 135-Z40A-PB-14.0-14.5 (JC35023-1A) was analyzed as a MS/MSD in this SDG. The recovery for hexachlorocyclopentadiene did not meet QC %R limits. In addition, the %RPD for hexachlorocyclopentadiene exceeded the RPD QC limit. Therefore, hexachlorocyclopentadiene was estimated (UJ) in sample 135-Z40A-PB-14.0-14.5.

Sample Results

The nondetect result for 2,4-dinitrophenol in sample 135-Z40A-SW-N-12.0-12.5 (JC35023-13A) exceeded the NJDEP DIGWSSL action level; therefore, the nondetect result may not meet project objectives. Refer to the nonconformance tables in Appendix B for a listing of results exceeding the NJDEP DIGWSSL criteria.

Reported results (flagged J by the laboratory) that were less than the RL but greater than or equal to the MDL are approximate values and have been qualified as estimated (J).

Data Quality and Usability

The following issues were noted for this sample set:

- Zinc and mercury were negated (UB) in the EB sample 135-FB20170107 due to MB contamination.
- Antimony was qualified as estimated (UJ) in sample 135-Z40A-PB-14.0-14.5 with a possible low bias due to poor MS/MSD recoveries.
- Aluminum, calcium, magnesium, manganese, potassium and zinc were estimated (J) in sample 135-Z40A-PB-14.0-14.5 with a high bias due to high MS/MSD recoveries.

- Hexachlorocyclopentadiene was estimated (UJ) in sample 135-Z40A-PB-14.0-14.5 with a possible low bias due to poor MSD recovery and poor MS/MSD precision.

- The nondetect results for selected VOCs and SVOC exceeded the NJDEP DIGWSSL criteria; therefore, the nondetect results may not meet project objectives. Refer to the nonconformance tables in Appendix B for a listing of results exceeding the NJDEP DIGWSSL.

- Sample results reported between the MDL and RL were estimated with an unknown direction of bias.

- The nondetect result for thallium in the EB was qualified as estimated for negative drift in the laboratory method blank.

ATTACHMENTS

Attachment A: Target Analyte Summary Hit List(s)

Attachment B: Data Validation Report Form

Attachment A

Target Analyte Summary Hit List(s)

Soil Target Analyte Summary Hit List (TAL Metals)

Site Name Site 135 South Pit Bottom
Sampling Date January 6, 2017
Lab Name/ID SGS/Accutest, Dayton, NJ
SDG No JC35023A
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID 135-FB20170107

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-Z40A-PB-14.0-14.5	JC35023-1A	ALUMINUM	1.9	7570	7570	63	Qualify	1
135-Z40A-PB-14.0-14.5	JC35023-1A	ANTIMONY	U	U	UJ	2.5	Qualify	2
135-Z40A-PB-14.0-14.5	JC35023-1A	ARSENIC	0.22	7.1	7.1	2.5		
135-Z40A-PB-14.0-14.5	JC35023-1A	BARIUM	U	40.0	40.0	25		
135-Z40A-PB-14.0-14.5	JC35023-1A	BERYLLIUM	0.039	0.73	0.73	0.25		
135-Z40A-PB-14.0-14.5	JC35023-1A	CADMIUM	U	0.38B	0.38	0.63	Qualify	4
135-Z40A-PB-14.0-14.5	JC35023-1A	CALCIUM METAL	8.4	1950	1950	630	Qualify	1,3
135-Z40A-PB-14.0-14.5	JC35023-1A	CHROMIUM	U	17.1	17.1	1.3		
135-Z40A-PB-14.0-14.5	JC35023-1A	COBALT	U	4.6B	4.6	6.3	Qualify	4
135-Z40A-PB-14.0-14.5	JC35023-1A	COPPER	U	19.2	19.2	3.2		
135-Z40A-PB-14.0-14.5	JC35023-1A	IRON	2.4	13000	13000	63		
135-Z40A-PB-14.0-14.5	JC35023-1A	LEAD	U	148	148	2.5		
135-Z40A-PB-14.0-14.5	JC35023-1A	MAGNESIUM	U	3180	3180	630	Qualify	1
135-Z40A-PB-14.0-14.5	JC35023-1A	MANGANESE	0.039	125	125	1.9	Qualify	1
135-Z40A-PB-14.0-14.5	JC35023-1A	NICKEL	U	11.3	11.3	5.1		
135-Z40A-PB-14.0-14.5	JC35023-1A	POTASSIUM	U	1360	1360	1300	Qualify	1

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135-Z40A-PB-14.0-14.5	JC35023-1A	SILVER	U	0.43B	0.43	0.63	Qualify	4
135-Z40A-PB-14.0-14.5	JC35023-1A	SODIUM	16.6	673B	673	1300	Qualify	4
135-Z40A-PB-14.0-14.5	JC35023-1A	VANADIUM	U	28.0	28.0	6.3		
135-Z40A-PB-14.0-14.5	JC35023-1A	ZINC	U	199	199	6.3	Qualify	1
135-Z40A-SW-E-10.0-10.5	JC35023-10A	ALUMINUM	1.9	8820	8820	31		
135-Z40A-SW-E-10.0-10.5	JC35023-10A	ARSENIC	0.22	4.6	4.6	1.2		
135-Z40A-SW-E-10.0-10.5	JC35023-10A	BARIUM	U	59.6	59.6	12		
135-Z40A-SW-E-10.0-10.5	JC35023-10A	BERYLLIUM	0.039	0.85	0.85	0.25		
135-Z40A-SW-E-10.0-10.5	JC35023-10A	CADMIUM	U	0.19B	0.19	0.31	Qualify	4
135-Z40A-SW-E-10.0-10.5	JC35023-10A	CALCIUM METAL	8.4	2910	2910	310		
135-Z40A-SW-E-10.0-10.5	JC35023-10A	CHROMIUM	U	31.9	31.9	0.62		
135-Z40A-SW-E-10.0-10.5	JC35023-10A	COBALT	U	6.3	6.3	6.2		
135-Z40A-SW-E-10.0-10.5	JC35023-10A	COPPER	U	19.7	19.7	1.6		
135-Z40A-SW-E-10.0-10.5	JC35023-10A	IRON	2.4	12800	12800	31		
135-Z40A-SW-E-10.0-10.5	JC35023-10A	LEAD	U	43.0	43.0	1.2		
135-Z40A-SW-E-10.0-10.5	JC35023-10A	MAGNESIUM	U	4430	4430	310		
135-Z40A-SW-E-10.0-10.5	JC35023-10A	MANGANESE	0.039	341	341	0.93		
135-Z40A-SW-E-10.0-10.5	JC35023-10A	NICKEL	U	12.0	12.0	2.5		
135-Z40A-SW-E-10.0-10.5	JC35023-10A	POTASSIUM	U	2120	2120	620		
135-Z40A-SW-E-10.0-10.5	JC35023-10A	SILVER	U	0.86	0.86	0.62		
135-Z40A-SW-E-10.0-10.5	JC35023-10A	SODIUM	16.6	263B	263	620	Qualify	4
135-Z40A-SW-E-10.0-10.5	JC35023-10A	VANADIUM	U	34.6	34.6	3.1		
135-Z40A-SW-E-10.0-10.5	JC35023-10A	ZINC	U	89.6	89.6	3.1		
135-Z40A-SW-E-12.0-12.5	JC35023-9A	ALUMINUM	1.9	11400	11400	49		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-Z40A-SW-E-12.0-12.5	JC35023-9A	ANTIMONY	U	0.38B	0.38	2.0	Qualify	4
135-Z40A-SW-E-12.0-12.5	JC35023-9A	ARSENIC	0.22	6.1	6.1	2.0		
135-Z40A-SW-E-12.0-12.5	JC35023-9A	BARIUM	U	81.2	81.2	20		
135-Z40A-SW-E-12.0-12.5	JC35023-9A	BERYLLIUM	0.039	0.86	0.86	0.20		
135-Z40A-SW-E-12.0-12.5	JC35023-9A	CADMIUM	U	0.21B	0.21	0.49	Qualify	4
135-Z40A-SW-E-12.0-12.5	JC35023-9A	CALCIUM METAL	8.4	2240	2240	490		
135-Z40A-SW-E-12.0-12.5	JC35023-9A	CHROMIUM	U	52.7	52.7	0.98		
135-Z40A-SW-E-12.0-12.5	JC35023-9A	COBALT	U	8.8	8.8	4.9		
135-Z40A-SW-E-12.0-12.5	JC35023-9A	COPPER	U	28.5	28.5	2.5		
135-Z40A-SW-E-12.0-12.5	JC35023-9A	IRON	2.4	18700	18700	49		
135-Z40A-SW-E-12.0-12.5	JC35023-9A	LEAD	U	86.6	86.6	2.0		
135-Z40A-SW-E-12.0-12.5	JC35023-9A	MAGNESIUM	U	3750	3750	490		
135-Z40A-SW-E-12.0-12.5	JC35023-9A	MANGANESE	0.039	529	529	1.5		
135-Z40A-SW-E-12.0-12.5	JC35023-9A	NICKEL	U	15.7	15.7	3.9		
135-Z40A-SW-E-12.0-12.5	JC35023-9A	POTASSIUM	U	1770	1770	980		
135-Z40A-SW-E-12.0-12.5	JC35023-9A	SODIUM	16.6	206B	206	980	Qualify	4
135-Z40A-SW-E-12.0-12.5	JC35023-9A	VANADIUM	U	39.2	39.2	4.9		
135-Z40A-SW-E-12.0-12.5	JC35023-9A	ZINC	U	189	189	4.9		
135-Z40A-SW-E-6.0-6.5	JC35023-12A	ALUMINUM	1.9	10100	10100	61		
135-Z40A-SW-E-6.0-6.5	JC35023-12A	ANTIMONY	U	15.5	15.5	2.5		
135-Z40A-SW-E-6.0-6.5	JC35023-12A	ARSENIC	0.22	9.6	9.6	2.5		
135-Z40A-SW-E-6.0-6.5	JC35023-12A	BARIUM	U	143	143	25		
135-Z40A-SW-E-6.0-6.5	JC35023-12A	BERYLLIUM	0.039	0.75	0.75	0.25		
135-Z40A-SW-E-6.0-6.5	JC35023-12A	CADMIUM	U	1.4	1.4	0.61		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-Z40A-SW-E-6.0-6.5	JC35023-12A	CALCIUM METAL	8.4	3660	3660	610		
135-Z40A-SW-E-6.0-6.5	JC35023-12A	CHROMIUM	U	167	167	1.2		
135-Z40A-SW-E-6.0-6.5	JC35023-12A	COBALT	U	9.9	9.9	6.1		
135-Z40A-SW-E-6.0-6.5	JC35023-12A	COPPER	U	230	230	3.1		
135-Z40A-SW-E-6.0-6.5	JC35023-12A	IRON	2.4	19000	19000	61		
135-Z40A-SW-E-6.0-6.5	JC35023-12A	LEAD	U	455	455	2.5		
135-Z40A-SW-E-6.0-6.5	JC35023-12A	MAGNESIUM	U	3660	3660	610		
135-Z40A-SW-E-6.0-6.5	JC35023-12A	MANGANESE	0.039	376	376	1.8		
135-Z40A-SW-E-6.0-6.5	JC35023-12A	NICKEL	U	23.8	23.8	4.9		
135-Z40A-SW-E-6.0-6.5	JC35023-12A	POTASSIUM	U	1290	1290	1200		
135-Z40A-SW-E-6.0-6.5	JC35023-12A	SELENIUM	U	0.92B	0.92	2.5	Qualify	4
135-Z40A-SW-E-6.0-6.5	JC35023-12A	SILVER	U	0.48B	0.48	0.61	Qualify	4
135-Z40A-SW-E-6.0-6.5	JC35023-12A	SODIUM	16.6	422B	422	1200	Qualify	4
135-Z40A-SW-E-6.0-6.5	JC35023-12A	VANADIUM	U	34.7	34.7	6.1		
135-Z40A-SW-E-6.0-6.5	JC35023-12A	ZINC	U	687	687	6.1		
135-Z40A-SW-E-8.0-8.5	JC35023-11A	ALUMINUM	1.9	10500	10500	61		
135-Z40A-SW-E-8.0-8.5	JC35023-11A	ANTIMONY	U	3.4	3.4	2.4		
135-Z40A-SW-E-8.0-8.5	JC35023-11A	ARSENIC	0.22	8.6	8.6	2.4		
135-Z40A-SW-E-8.0-8.5	JC35023-11A	BARIUM	U	158	158	24		
135-Z40A-SW-E-8.0-8.5	JC35023-11A	BERYLLIUM	0.039	0.71	0.71	0.24		
135-Z40A-SW-E-8.0-8.5	JC35023-11A	CADMIUM	U	0.61	0.61	0.61		
135-Z40A-SW-E-8.0-8.5	JC35023-11A	CALCIUM METAL	8.4	6750	6750	610		
135-Z40A-SW-E-8.0-8.5	JC35023-11A	CHROMIUM	U	122	122	1.2		
135-Z40A-SW-E-8.0-8.5	JC35023-11A	COBALT	U	8.2	8.2	6.1		

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135-Z40A-SW-E-8.0-8.5	JC35023-11A	COPPER	U	81.1	81.1	3.1		
135-Z40A-SW-E-8.0-8.5	JC35023-11A	IRON	2.4	18000	18000	61		
135-Z40A-SW-E-8.0-8.5	JC35023-11A	LEAD	U	301	301	2.4		
135-Z40A-SW-E-8.0-8.5	JC35023-11A	MAGNESIUM	U	3100	3100	610		
135-Z40A-SW-E-8.0-8.5	JC35023-11A	MANGANESE	0.039	404	404	1.8		
135-Z40A-SW-E-8.0-8.5	JC35023-11A	NICKEL	U	19.7	19.7	4.9		
135-Z40A-SW-E-8.0-8.5	JC35023-11A	POTASSIUM	U	1380	1380	1200		
135-Z40A-SW-E-8.0-8.5	JC35023-11A	SELENIUM	U	0.92B	0.92	2.4	Qualify	4
135-Z40A-SW-E-8.0-8.5	JC35023-11A	SILVER	U	0.43B	0.43	0.61	Qualify	4
135-Z40A-SW-E-8.0-8.5	JC35023-11A	SODIUM	16.6	382B	382	1200	Qualify	4
135-Z40A-SW-E-8.0-8.5	JC35023-11A	VANADIUM	U	39.1	39.1	6.1		
135-Z40A-SW-E-8.0-8.5	JC35023-11A	ZINC	U	356	356	6.1		
135-Z40A-SW-N-10.0-10.5	JC35023-14A	ALUMINUM	1.9	11500	11500	71		
135-Z40A-SW-N-10.0-10.5	JC35023-14A	ANTIMONY	U	7.6	7.6	2.8		
135-Z40A-SW-N-10.0-10.5	JC35023-14A	ARSENIC	0.22	68.9	68.9	2.8		
135-Z40A-SW-N-10.0-10.5	JC35023-14A	BARIUM	U	616	616	28		
135-Z40A-SW-N-10.0-10.5	JC35023-14A	BERYLLIUM	0.039	0.74	0.74	0.28		
135-Z40A-SW-N-10.0-10.5	JC35023-14A	CADMIUM	U	2.1	2.1	0.71		
135-Z40A-SW-N-10.0-10.5	JC35023-14A	CALCIUM METAL	8.4	11400	11400	710		
135-Z40A-SW-N-10.0-10.5	JC35023-14A	CHROMIUM	U	33.9	33.9	1.4		
135-Z40A-SW-N-10.0-10.5	JC35023-14A	COBALT	U	8.6	8.6	7.1		
135-Z40A-SW-N-10.0-10.5	JC35023-14A	COPPER	U	128	128	3.5		
135-Z40A-SW-N-10.0-10.5	JC35023-14A	IRON	2.4	32000	32000	71		
135-Z40A-SW-N-10.0-10.5	JC35023-14A	LEAD	U	1490	1490	5.7		

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135-Z40A-SW-N-10.0-10.5	JC35023-14A	MAGNESIUM	U	1500	1500	710		
135-Z40A-SW-N-10.0-10.5	JC35023-14A	MANGANESE	0.039	360	360	2.1		
135-Z40A-SW-N-10.0-10.5	JC35023-14A	NICKEL	U	21.4	21.4	5.7		
135-Z40A-SW-N-10.0-10.5	JC35023-14A	POTASSIUM	U	1450	1450	1400		
135-Z40A-SW-N-10.0-10.5	JC35023-14A	SELENIUM	U	3.6	3.6	2.8		
135-Z40A-SW-N-10.0-10.5	JC35023-14A	SILVER	U	1.6	1.6	0.71		
135-Z40A-SW-N-10.0-10.5	JC35023-14A	SODIUM	16.6	1220B	1220	1400	Qualify	4
135-Z40A-SW-N-10.0-10.5	JC35023-14A	THALLIUM	U	1.1B	1.1	1.4	Qualify	4
135-Z40A-SW-N-10.0-10.5	JC35023-14A	VANADIUM	U	37.6	37.6	7.1		
135-Z40A-SW-N-10.0-10.5	JC35023-14A	ZINC	U	1200	1200	7.1		
135-Z40A-SW-N-12.0-12.5	JC35023-13A	ALUMINUM	1.9	5790	5790	52		
135-Z40A-SW-N-12.0-12.5	JC35023-13A	ANTIMONY	U	1.5B	1.5	2.1	Qualify	4
135-Z40A-SW-N-12.0-12.5	JC35023-13A	ARSENIC	0.22	13.2	13.2	2.1		
135-Z40A-SW-N-12.0-12.5	JC35023-13A	BARIUM	U	329	329	21		
135-Z40A-SW-N-12.0-12.5	JC35023-13A	BERYLLIUM	0.039	0.51	0.51	0.21		
135-Z40A-SW-N-12.0-12.5	JC35023-13A	CADMIUM	U	0.48B	0.48	0.52	Qualify	4
135-Z40A-SW-N-12.0-12.5	JC35023-13A	CALCIUM METAL	8.4	4250	4250	520		
135-Z40A-SW-N-12.0-12.5	JC35023-13A	CHROMIUM	U	18.6	18.6	1.0		
135-Z40A-SW-N-12.0-12.5	JC35023-13A	COBALT	U	6.9	6.9	5.2		
135-Z40A-SW-N-12.0-12.5	JC35023-13A	COPPER	U	42.2	42.2	2.6		
135-Z40A-SW-N-12.0-12.5	JC35023-13A	IRON	2.4	15000	15000	52		
135-Z40A-SW-N-12.0-12.5	JC35023-13A	LEAD	U	574	574	2.1		
135-Z40A-SW-N-12.0-12.5	JC35023-13A	MAGNESIUM	U	729	729	520		
135-Z40A-SW-N-12.0-12.5	JC35023-13A	MANGANESE	0.039	166	166	1.6		

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135-Z40A-SW-N-12.0-12.5	JC35023-13A	NICKEL	U	17.0	17.0	4.2		
135-Z40A-SW-N-12.0-12.5	JC35023-13A	POTASSIUM	U	782B	782	1000	Qualify	4
135-Z40A-SW-N-12.0-12.5	JC35023-13A	SELENIUM	U	2.0B	2.0	2.1	Qualify	4
135-Z40A-SW-N-12.0-12.5	JC35023-13A	SILVER	U	0.54	0.54	0.52		
135-Z40A-SW-N-12.0-12.5	JC35023-13A	SODIUM	16.6	591B	591	1000	Qualify	4
135-Z40A-SW-N-12.0-12.5	JC35023-13A	VANADIUM	U	27.6	27.6	5.2		
135-Z40A-SW-N-12.0-12.5	JC35023-13A	ZINC	U	451	451	5.2		
135-Z40A-SW-N-8.0-8.5	JC35023-15A	ALUMINUM	1.9	7130	7130	68		
135-Z40A-SW-N-8.0-8.5	JC35023-15A	ANTIMONY	U	1.8B	1.8	2.7	Qualify	4
135-Z40A-SW-N-8.0-8.5	JC35023-15A	ARSENIC	0.22	22.8	22.8	2.7		
135-Z40A-SW-N-8.0-8.5	JC35023-15A	BARIUM	U	521	521	27		
135-Z40A-SW-N-8.0-8.5	JC35023-15A	BERYLLIUM	0.039	0.53	0.53	0.27		
135-Z40A-SW-N-8.0-8.5	JC35023-15A	CADMIUM	U	0.96	0.96	0.68		
135-Z40A-SW-N-8.0-8.5	JC35023-15A	CALCIUM METAL	8.4	10100	10100	680		
135-Z40A-SW-N-8.0-8.5	JC35023-15A	CHROMIUM	U	25.3	25.3	1.4		
135-Z40A-SW-N-8.0-8.5	JC35023-15A	COBALT	U	8.4	8.4	6.8		
135-Z40A-SW-N-8.0-8.5	JC35023-15A	COPPER	U	105	105	3.4		
135-Z40A-SW-N-8.0-8.5	JC35023-15A	IRON	2.4	17800	17800	68		
135-Z40A-SW-N-8.0-8.5	JC35023-15A	LEAD	U	2530	2530	8.1		
135-Z40A-SW-N-8.0-8.5	JC35023-15A	MAGNESIUM	U	1140	1140	680		
135-Z40A-SW-N-8.0-8.5	JC35023-15A	MANGANESE	0.039	232	232	2.0		
135-Z40A-SW-N-8.0-8.5	JC35023-15A	NICKEL	U	21.0	21.0	5.4		
135-Z40A-SW-N-8.0-8.5	JC35023-15A	POTASSIUM	U	1200B	1200	1400	Qualify	4
135-Z40A-SW-N-8.0-8.5	JC35023-15A	SELENIUM	U	15.3	15.3	2.7		

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135-Z40A-SW-N-8.0-8.5	JC35023-15A	SILVER	U	1.1	1.1	0.68		
135-Z40A-SW-N-8.0-8.5	JC35023-15A	SODIUM	16.6	933B	933	1400	Qualify	4
135-Z40A-SW-N-8.0-8.5	JC35023-15A	VANADIUM	U	30.9	30.9	6.8		
135-Z40A-SW-N-8.0-8.5	JC35023-15A	ZINC	U	470	470	6.8		
135-Z40A-SW-S-10.0-10.5	JC35023-3A	ALUMINUM	1.9	6520	6520	66		
135-Z40A-SW-S-10.0-10.5	JC35023-3A	ANTIMONY	U	3.1	3.1	2.6		
135-Z40A-SW-S-10.0-10.5	JC35023-3A	ARSENIC	0.22	15.2	15.2	2.6		
135-Z40A-SW-S-10.0-10.5	JC35023-3A	BARIUM	U	287	287	26		
135-Z40A-SW-S-10.0-10.5	JC35023-3A	BERYLLIUM	0.039	0.52	0.52	0.26		
135-Z40A-SW-S-10.0-10.5	JC35023-3A	CADMIUM	U	1.6	1.6	0.66		
135-Z40A-SW-S-10.0-10.5	JC35023-3A	CALCIUM METAL	8.4	4870	4870	660		
135-Z40A-SW-S-10.0-10.5	JC35023-3A	CHROMIUM	U	177	177	1.3		
135-Z40A-SW-S-10.0-10.5	JC35023-3A	COBALT	U	8.1	8.1	6.6		
135-Z40A-SW-S-10.0-10.5	JC35023-3A	COPPER	U	450	450	3.3		
135-Z40A-SW-S-10.0-10.5	JC35023-3A	IRON	2.4	29800	29800	66		
135-Z40A-SW-S-10.0-10.5	JC35023-3A	LEAD	U	710	710	2.6		
135-Z40A-SW-S-10.0-10.5	JC35023-3A	MAGNESIUM	U	1380	1380	660		
135-Z40A-SW-S-10.0-10.5	JC35023-3A	MANGANESE	0.039	3620	3620	9.9		
135-Z40A-SW-S-10.0-10.5	JC35023-3A	NICKEL	U	28.4	28.4	5.3		
135-Z40A-SW-S-10.0-10.5	JC35023-3A	POTASSIUM	U	904B	904	1300	Qualify	4
135-Z40A-SW-S-10.0-10.5	JC35023-3A	SILVER	U	1.9B	1.9	3.3	Qualify	4
135-Z40A-SW-S-10.0-10.5	JC35023-3A	SODIUM	16.6	326B	326	1300	Qualify	4
135-Z40A-SW-S-10.0-10.5	JC35023-3A	THALLIUM	U	3.9B	3.9	6.6	Qualify	4
135-Z40A-SW-S-10.0-10.5	JC35023-3A	VANADIUM	U	34.2	34.2	6.6		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-Z40A-SW-S-10.0-10.5	JC35023-3A	ZINC	U	1170	1170	6.6		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	ALUMINUM	1.9	6110	6110	69		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	ANTIMONY	U	6.0B	6.0	8.2	Qualify	4
135-Z40A-SW-S-12.0-12.5	JC35023-2A	ARSENIC	0.22	17.3	17.3	2.7		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	BARIUM	U	413	413	27		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	BERYLLIUM	0.039	0.53	0.53	0.27		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	CADMIUM	U	2.8	2.8	0.69		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	CALCIUM METAL	8.4	8800	8800	690		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	CHROMIUM	U	1530	1530	4.1		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	COBALT	U	5.8B	5.8	6.9	Qualify	4
135-Z40A-SW-S-12.0-12.5	JC35023-2A	COPPER	U	553	553	3.4		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	IRON	2.4	20400	20400	69		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	LEAD	U	1310	1310	8.2		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	MAGNESIUM	U	1890	1890	690		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	MANGANESE	0.039	416	416	2.1		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	NICKEL	U	29.6	29.6	5.5		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	POTASSIUM	U	769B	769	1400	Qualify	4
135-Z40A-SW-S-12.0-12.5	JC35023-2A	SELENIUM	U	3.1	3.1	2.7		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	SILVER	U	1.5	1.5	0.69		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	SODIUM	16.6	477B	477	1400	Qualify	4
135-Z40A-SW-S-12.0-12.5	JC35023-2A	VANADIUM	U	29.6	29.6	21		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	ZINC	U	2750	2750	21		
135-Z40A-SW-S-6.0-6.5	JC35023-5A	ALUMINUM	1.9	6520	6520	60		
135-Z40A-SW-S-6.0-6.5	JC35023-5A	ANTIMONY	U	1.5B	1.5	2.4	Qualify	4

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-Z40A-SW-S-6.0-6.5	JC35023-5A	ARSENIC	0.22	15.7	15.7	2.4		
135-Z40A-SW-S-6.0-6.5	JC35023-5A	BARIUM	U	321	321	24		
135-Z40A-SW-S-6.0-6.5	JC35023-5A	BERYLLIUM	0.039	0.41	0.41	0.24		
135-Z40A-SW-S-6.0-6.5	JC35023-5A	CADMIUM	U	0.91	0.91	0.60		
135-Z40A-SW-S-6.0-6.5	JC35023-5A	CALCIUM METAL	8.4	14200	14200	600		
135-Z40A-SW-S-6.0-6.5	JC35023-5A	CHROMIUM	U	99.0	99.0	1.2		
135-Z40A-SW-S-6.0-6.5	JC35023-5A	COBALT	U	6.8	6.8	6.0		
135-Z40A-SW-S-6.0-6.5	JC35023-5A	COPPER	U	160	160	3.0		
135-Z40A-SW-S-6.0-6.5	JC35023-5A	IRON	2.4	19200	19200	60		
135-Z40A-SW-S-6.0-6.5	JC35023-5A	LEAD	U	684	684	2.4		
135-Z40A-SW-S-6.0-6.5	JC35023-5A	MAGNESIUM	U	1350	1350	600		
135-Z40A-SW-S-6.0-6.5	JC35023-5A	MANGANESE	0.039	589	589	1.8		
135-Z40A-SW-S-6.0-6.5	JC35023-5A	NICKEL	U	19.6	19.6	4.8		
135-Z40A-SW-S-6.0-6.5	JC35023-5A	POTASSIUM	U	1010B	1010	1200	Qualify	4
135-Z40A-SW-S-6.0-6.5	JC35023-5A	SELENIUM	U	1.4B	1.4	2.4	Qualify	4
135-Z40A-SW-S-6.0-6.5	JC35023-5A	SILVER	U	1.4	1.4	0.60		
135-Z40A-SW-S-6.0-6.5	JC35023-5A	SODIUM	16.6	351B	351	1200	Qualify	4
135-Z40A-SW-S-6.0-6.5	JC35023-5A	VANADIUM	U	27.2	27.2	6.0		
135-Z40A-SW-S-6.0-6.5	JC35023-5A	ZINC	U	639	639	6.0		
135-Z40A-SW-S-8.0-8.5	JC35023-4A	ALUMINUM	1.9	6880	6880	62		
135-Z40A-SW-S-8.0-8.5	JC35023-4A	ANTIMONY	U	3.2	3.2	2.5		
135-Z40A-SW-S-8.0-8.5	JC35023-4A	ARSENIC	0.22	22.6	22.6	2.5		
135-Z40A-SW-S-8.0-8.5	JC35023-4A	BARIUM	U	217	217	25		
135-Z40A-SW-S-8.0-8.5	JC35023-4A	BERYLLIUM	0.039	0.57	0.57	0.25		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-Z40A-SW-S-8.0-8.5	JC35023-4A	CADMIUM	U	1.5	1.5	0.62		
135-Z40A-SW-S-8.0-8.5	JC35023-4A	CALCIUM METAL	8.4	4040	4040	620		
135-Z40A-SW-S-8.0-8.5	JC35023-4A	CHROMIUM	U	271	271	1.2		
135-Z40A-SW-S-8.0-8.5	JC35023-4A	COBALT	U	8.6	8.6	6.2		
135-Z40A-SW-S-8.0-8.5	JC35023-4A	COPPER	U	305	305	3.1		
135-Z40A-SW-S-8.0-8.5	JC35023-4A	IRON	2.4	27600	27600	62		
135-Z40A-SW-S-8.0-8.5	JC35023-4A	LEAD	U	542	542	2.5		
135-Z40A-SW-S-8.0-8.5	JC35023-4A	MAGNESIUM	U	1960	1960	620		
135-Z40A-SW-S-8.0-8.5	JC35023-4A	MANGANESE	0.039	630	630	1.8		
135-Z40A-SW-S-8.0-8.5	JC35023-4A	NICKEL	U	31.5	31.5	4.9		
135-Z40A-SW-S-8.0-8.5	JC35023-4A	POTASSIUM	U	1070B	1070	1200	Qualify	4
135-Z40A-SW-S-8.0-8.5	JC35023-4A	SELENIUM	U	3.0	3.0	2.5		
135-Z40A-SW-S-8.0-8.5	JC35023-4A	SILVER	U	0.88	0.88	0.62		
135-Z40A-SW-S-8.0-8.5	JC35023-4A	SODIUM	16.6	299B	299	1200	Qualify	4
135-Z40A-SW-S-8.0-8.5	JC35023-4A	VANADIUM	U	38.9	38.9	6.2		
135-Z40A-SW-S-8.0-8.5	JC35023-4A	ZINC	U	1050	1050	6.2		
135-Z40A-SW-W-10.0-10.5	JC35023-7A	ALUMINUM	1.9	10100	10100	63		
135-Z40A-SW-W-10.0-10.5	JC35023-7A	ANTIMONY	U	2.5	2.5	2.5		
135-Z40A-SW-W-10.0-10.5	JC35023-7A	ARSENIC	0.22	13.2	13.2	2.5		
135-Z40A-SW-W-10.0-10.5	JC35023-7A	BARIUM	U	379	379	25		
135-Z40A-SW-W-10.0-10.5	JC35023-7A	BERYLLIUM	0.039	0.57	0.57	0.25		
135-Z40A-SW-W-10.0-10.5	JC35023-7A	CADMIUM	U	0.86	0.86	0.63		
135-Z40A-SW-W-10.0-10.5	JC35023-7A	CALCIUM METAL	8.4	24800	24800	630		
135-Z40A-SW-W-10.0-10.5	JC35023-7A	CHROMIUM	U	48.0	48.0	1.3		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-Z40A-SW-W-10.0-10.5	JC35023-7A	COBALT	U	7.4	7.4	6.3		
135-Z40A-SW-W-10.0-10.5	JC35023-7A	COPPER	U	108	108	3.2		
135-Z40A-SW-W-10.0-10.5	JC35023-7A	IRON	2.4	22900	22900	63		
135-Z40A-SW-W-10.0-10.5	JC35023-7A	LEAD	U	518	518	2.5		
135-Z40A-SW-W-10.0-10.5	JC35023-7A	MAGNESIUM	U	3230	3230	630		
135-Z40A-SW-W-10.0-10.5	JC35023-7A	MANGANESE	0.039	366	366	1.9		
135-Z40A-SW-W-10.0-10.5	JC35023-7A	NICKEL	U	23.0	23.0	5.1		
135-Z40A-SW-W-10.0-10.5	JC35023-7A	POTASSIUM	U	1090B	1090	1300	Qualify	4
135-Z40A-SW-W-10.0-10.5	JC35023-7A	SELENIUM	U	3.3	3.3	2.5		
135-Z40A-SW-W-10.0-10.5	JC35023-7A	SILVER	U	0.80	0.80	0.63		
135-Z40A-SW-W-10.0-10.5	JC35023-7A	SODIUM	16.6	694B	694	1300	Qualify	4
135-Z40A-SW-W-10.0-10.5	JC35023-7A	VANADIUM	U	39.9	39.9	6.3		
135-Z40A-SW-W-10.0-10.5	JC35023-7A	ZINC	U	485	485	6.3		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	ALUMINUM	1.9	8570	8570	68		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	ANTIMONY	U	2.7	2.7	2.7		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	ARSENIC	0.22	14.1	14.1	2.7		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	BARIUM	U	1080	1080	27		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	BERYLLIUM	0.039	0.58	0.58	0.27		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	CADMIUM	U	0.77	0.77	0.68		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	CALCIUM METAL	8.4	25800	25800	680		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	CHROMIUM	U	96.7	96.7	1.4		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	COBALT	U	7.5	7.5	6.8		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	COPPER	U	131	131	3.4		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	IRON	2.4	19400	19400	68		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-Z40A-SW-W-12.0-12.5	JC35023-6A	LEAD	U	1710	1710	5.4		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	MAGNESIUM	U	3100	3100	680		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	MANGANESE	0.039	390	390	2.0		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	NICKEL	U	23.6	23.6	5.4		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	POTASSIUM	U	1300B	1300	1400	Qualify	4
135-Z40A-SW-W-12.0-12.5	JC35023-6A	SELENIUM	U	1.3B	1.3	2.7	Qualify	4
135-Z40A-SW-W-12.0-12.5	JC35023-6A	SILVER	U	1.2	1.2	0.68		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	SODIUM	16.6	935B	935	1400	Qualify	4
135-Z40A-SW-W-12.0-12.5	JC35023-6A	VANADIUM	U	44.8	44.8	6.8		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	ZINC	U	680	680	6.8		
135-Z40A-SW-W-8.0-8.5	JC35023-8A	ALUMINUM	1.9	10100	10100	62		
135-Z40A-SW-W-8.0-8.5	JC35023-8A	ANTIMONY	U	9.7	9.7	2.5		
135-Z40A-SW-W-8.0-8.5	JC35023-8A	ARSENIC	0.22	19.0	19.0	2.5		
135-Z40A-SW-W-8.0-8.5	JC35023-8A	BARIUM	U	682	682	25		
135-Z40A-SW-W-8.0-8.5	JC35023-8A	BERYLLIUM	0.039	0.47	0.47	0.25		
135-Z40A-SW-W-8.0-8.5	JC35023-8A	CADMIUM	U	5.0	5.0	3.1		
135-Z40A-SW-W-8.0-8.5	JC35023-8A	CALCIUM METAL	8.4	7880	7880	620		
135-Z40A-SW-W-8.0-8.5	JC35023-8A	CHROMIUM	U	57.0	57.0	6.2		
135-Z40A-SW-W-8.0-8.5	JC35023-8A	COBALT	U	10.9	10.9	6.2		
135-Z40A-SW-W-8.0-8.5	JC35023-8A	COPPER	U	688	688	3.1		
135-Z40A-SW-W-8.0-8.5	JC35023-8A	IRON	2.4	32200	32200	62		
135-Z40A-SW-W-8.0-8.5	JC35023-8A	LEAD	U	619	619	2.5		
135-Z40A-SW-W-8.0-8.5	JC35023-8A	MAGNESIUM	U	2490	2490	620		
135-Z40A-SW-W-8.0-8.5	JC35023-8A	MANGANESE	0.039	7130	7130	19		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-Z40A-SW-W-8.0-8.5	JC35023-8A	NICKEL	U	33.5	33.5	5.0		
135-Z40A-SW-W-8.0-8.5	JC35023-8A	POTASSIUM	U	1960	1960	1200		
135-Z40A-SW-W-8.0-8.5	JC35023-8A	SILVER	U	2.5B	2.5	3.1	Qualify	4
135-Z40A-SW-W-8.0-8.5	JC35023-8A	SODIUM	16.6	620B	620	1200	Qualify	4
135-Z40A-SW-W-8.0-8.5	JC35023-8A	THALLIUM	U	8.8B	8.8	12	Qualify	4
135-Z40A-SW-W-8.0-8.5	JC35023-8A	VANADIUM	U	46.7	46.7	6.2		
135-Z40A-SW-W-8.0-8.5	JC35023-8A	ZINC	U	3640	3640	31		
135-Z40A-PB-14.0-14.5	JC35023-1A	MERCURY	U	0.17	0.17	0.039		
135-Z40A-SW-E-10.0-10.5	JC35023-10A	MERCURY	U	0.057	0.057	0.033		
135-Z40A-SW-E-12.0-12.5	JC35023-9A	MERCURY	U	0.19	0.19	0.030		
135-Z40A-SW-E-6.0-6.5	JC35023-12A	MERCURY	U	0.82	0.82	0.039		
135-Z40A-SW-E-8.0-8.5	JC35023-11A	MERCURY	U	0.47	0.47	0.043		
135-Z40A-SW-N-10.0-10.5	JC35023-14A	MERCURY	U	0.69	0.69	0.044		
135-Z40A-SW-N-12.0-12.5	JC35023-13A	MERCURY	U	2.8	2.8	0.25		
135-Z40A-SW-N-8.0-8.5	JC35023-15A	MERCURY	U	0.71	0.71	0.042		
135-Z40A-SW-S-10.0-10.5	JC35023-3A	MERCURY	U	1.8	1.8	0.084		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	MERCURY	U	3.7	3.7	0.21		
135-Z40A-SW-S-6.0-6.5	JC35023-5A	MERCURY	U	1.5	1.5	0.078		
135-Z40A-SW-S-8.0-8.5	JC35023-4A	MERCURY	U	1.9	1.9	0.21		
135-Z40A-SW-W-10.0-10.5	JC35023-7A	MERCURY	U	7.0	7.0	0.38		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	MERCURY	U	11.1	11.1	0.86		
135-Z40A-SW-W-8.0-8.5	JC35023-8A	MERCURY	U	3.5	3.5	0.20		

Note: A “U” under Method Blank column indicates a nondetect result.
A “U” under the Laboratory Sample Result and Validation Sample Result columns indicates a nondetect result at the RL.

NJDEP Laboratory Footnote

1. The reported values were estimated because the MS and/or MSD recoveries exceeded 125% for metals.
2. The reported value was qualified because the MS/MSD spike recovery was less than 75% for metals.
3. The reported or nondetect value was qualified because the MS/MSD was outside control limits for RPD.
4. The reported result was greater than the MDL but less than the RL and therefore was estimated.

Aqueous Target Analyte Summary Hit List (TAL Metals)

Site Name Site 135 South Pit Bottom
Sampling Date January 6, 2017
Lab Name/ID SGS/Accutest, Dayton, NJ
SDG No JC35023A
Sample Matrix Aqueous
Trip Blank ID NA
Field Blank ID 135-FB20170107

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/l)	Laboratory Sample Result (ug/l)	Validation Sample Result (ug/l)	RL (ug/l)	Quality Assurance Decision	NJDEP Validation Footnote
135-FB20170107	JC35023-16A	ZINC	2.1	1.5B	UB	20	Negate	1
135-FB20170107	JC35023-16A	MERCURY	0.048	0.083B	UB	0.20	Negate	1
135-FB20170107	JC35023-16A	Thallium	-2.2	U	UJ	10	Qualify	2

Note: A “U” under Method Blank column indicates a nondetect result.
A “U” under the Laboratory Sample Result and Validation Sample Result columns indicates a nondetect result at the RL.

NJDEP Laboratory Footnote

1. The value reported is less than or equal to 3x the value in the preparation/reagent blank. It is the policy of NJDEP-DPFSR to negate (UB) the reported value due to probable foreign contamination unrelated to the actual sample. The "B" qualifier alerts the end-user to the presence of this analyte in the method blank.

2. The nondetect result was qualified because of negative drift in the associated method blank.

Soil Target Analyte Summary Hit List (VOCs)

Site Name Site 135 South Pit Bottom
Sampling Date January 6, 2017
Lab Name/ID SGS/Accutest, Dayton, NJ
SDG No JC35023A
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID 135-FB20170107

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-Z40A-PB-14.0-14.5	JC35023-1A	2-BUTANONE (MEK)	U	10.5J	10.5	11	Qualify	1
135-Z40A-PB-14.0-14.5	JC35023-1A	ACETONE	U	41.9	41.9	11		
135-Z40A-SW-E-10.0-10.5	JC35023-10A	CYCLOHEXANE	U	150	150	130		
135-Z40A-SW-E-10.0-10.5	JC35023-10A	ETHYLBENZENE	U	47.5J	47.5	64	Qualify	1
135-Z40A-SW-E-10.0-10.5	JC35023-10A	ISOPROPYLBENZENE	U	817	817	130		
135-Z40A-SW-E-10.0-10.5	JC35023-10A	M+P-XYLENE	U	28.3J	28.3	64	Qualify	1
135-Z40A-SW-E-10.0-10.5	JC35023-10A	METHYLCYCLOHEXANE	U	882	882	130		
135-Z40A-SW-E-10.0-10.5	JC35023-10A	O-XYLENE	U	48.5J	48.5	64	Qualify	1
135-Z40A-SW-E-10.0-10.5	JC35023-10A	XYLENES	U	76.8	76.8	64		
135-Z40A-SW-E-12.0-12.5	JC35023-9A	CYCLOHEXANE	U	74.3J	74.3	120	Qualify	1
135-Z40A-SW-E-12.0-12.5	JC35023-9A	ETHYLBENZENE	U	20.9J	20.9	59	Qualify	1
135-Z40A-SW-E-12.0-12.5	JC35023-9A	ISOPROPYLBENZENE	U	341	341	120		
135-Z40A-SW-E-12.0-12.5	JC35023-9A	METHYLCYCLOHEXANE	U	401	401	120		
135-Z40A-SW-E-12.0-12.5	JC35023-9A	O-XYLENE	U	20.1J	20.1	59	Qualify	1
135-Z40A-SW-E-12.0-12.5	JC35023-9A	XYLENES	U	20.1J	20.1	59	Qualify	1

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-Z40A-SW-E-6.0-6.5	JC35023-12A	ISOPROPYLBENZENE	U	72.9J	72.9	160	Qualify	1
135-Z40A-SW-E-6.0-6.5	JC35023-12A	METHYLCYCLOHEXANE	U	234	234	160		
135-Z40A-SW-E-8.0-8.5	JC35023-11A	CYCLOHEXANE	U	136J	136	140	Qualify	1
135-Z40A-SW-E-8.0-8.5	JC35023-11A	ETHYLBENZENE	U	32.5J	32.5	69	Qualify	1
135-Z40A-SW-E-8.0-8.5	JC35023-11A	ISOPROPYLBENZENE	U	826	826	140		
135-Z40A-SW-E-8.0-8.5	JC35023-11A	METHYLCYCLOHEXANE	U	764	764	140		
135-Z40A-SW-E-8.0-8.5	JC35023-11A	O-XYLENE	U	19.0J	19.0	69	Qualify	1
135-Z40A-SW-E-8.0-8.5	JC35023-11A	XYLENES	U	19.0J	19.0	69	Qualify	1
135-Z40A-SW-N-10.0-10.5	JC35023-14A	ACETONE	U	16.1J	16.1	17	Qualify	1
135-Z40A-SW-N-10.0-10.5	JC35023-14A	CARBON DISULFIDE	U	0.71J	0.71	3.4	Qualify	1
135-Z40A-SW-N-12.0-12.5	JC35023-13A	ETHYLBENZENE	U	21.4J	21.4	130	Qualify	1
135-Z40A-SW-N-12.0-12.5	JC35023-13A	ISOPROPYLBENZENE	U	121J	121	260	Qualify	1
135-Z40A-SW-N-12.0-12.5	JC35023-13A	M+P-XYLENE	U	123J	123	130	Qualify	1
135-Z40A-SW-N-12.0-12.5	JC35023-13A	O-XYLENE	U	73.0J	73.0	130	Qualify	1
135-Z40A-SW-N-12.0-12.5	JC35023-13A	TOLUENE	U	32.4J	32.4	130	Qualify	1
135-Z40A-SW-N-12.0-12.5	JC35023-13A	XYLENES	U	196	196	130		
135-Z40A-SW-N-8.0-8.5	JC35023-15A	ACETONE	U	9.3J	9.3	17	Qualify	1
135-Z40A-SW-N-8.0-8.5	JC35023-15A	CARBON DISULFIDE	U	0.39J	0.39	3.4	Qualify	1
135-Z40A-SW-S-12.0-12.5	JC35023-2A	2-BUTANONE (MEK)	U	6.1J	6.1	14	Qualify	1
135-Z40A-SW-S-12.0-12.5	JC35023-2A	ACETONE	U	32.7	32.7	14		
135-Z40A-SW-W-10.0-10.5	JC35023-7A	ACETONE	U	9.8J	9.8	12	Qualify	1
135-Z40A-SW-W-10.0-10.5	JC35023-7A	ISOPROPYLBENZENE	U	0.27J	0.27	2.5	Qualify	1
135-Z40A-SW-W-12.0-12.5	JC35023-6A	2-BUTANONE (MEK)	U	6.2J	6.2	13	Qualify	1
135-Z40A-SW-W-12.0-12.5	JC35023-6A	ACETONE	U	51.3	51.3	13		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-Z40A-SW-W-12.0-12.5	JC35023-6A	BENZENE	U	0.25J	0.25	0.64	Qualify	1
135-Z40A-SW-W-12.0-12.5	JC35023-6A	CARBON DISULFIDE	U	0.94J	0.94	2.6	Qualify	1
135-Z40A-SW-W-12.0-12.5	JC35023-6A	ETHYLBENZENE	U	2.3	2.3	1.3		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	ISOPROPYLBENZENE	U	5.0	5.0	2.6		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	M+P-XYLENE	U	10.2	10.2	1.3		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	METHYLCYCLOHEXANE	U	1.3J	1.3	2.6	Qualify	1
135-Z40A-SW-W-12.0-12.5	JC35023-6A	O-XYLENE	U	6.1	6.1	1.3		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	TOLUENE	U	1.5	1.5	1.3		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	XYLENES	U	16.3	16.3	1.3		

Note: A “U” under Method Blank column indicates a nondetect result.
A “U” under the Laboratory Sample Result and Validation Sample Result columns indicates a nondetect result at the RL.

NJDEP Laboratory Footnote

1. The reported result was greater than the MDL but less than the RL and therefore was estimated.

Soil Target Analyte Summary Hit List (SVOCs)

Site Name Site 135 South Pit Bottom
Sampling Date January 6, 2017
Lab Name/ID SGS/Accutest, Dayton, NJ
SDG No JC35023A
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID 135-FB20170107

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-Z40A-PB-14.0-14.5	JC35023-1A	2-METHYLNAPHTHALENE	U	25.5J	25.5	83	Qualify	3
135-Z40A-PB-14.0-14.5	JC35023-1A	ACENAPHTHENE	U	30.0J	30.0	42	Qualify	3
135-Z40A-PB-14.0-14.5	JC35023-1A	ANTHRACENE	U	28.4J	28.4	42	Qualify	3
135-Z40A-PB-14.0-14.5	JC35023-1A	BENZO(A)ANTHRACENE	U	24.8J	24.8	42	Qualify	3
135-Z40A-PB-14.0-14.5	JC35023-1A	BENZO(B)FLUORANTHENE	U	21.7J	21.7	42	Qualify	3
135-Z40A-PB-14.0-14.5	JC35023-1A	CHRYSENE	U	27.2J	27.2	42	Qualify	3
135-Z40A-PB-14.0-14.5	JC35023-1A	FLUORANTHENE	U	57.3	57.3	42		
135-Z40A-PB-14.0-14.5	JC35023-1A	FLUORENE	U	31.7J	31.7	42	Qualify	3
135-Z40A-PB-14.0-14.5	JC35023-1A	HEXACHLOROCYCLOPENTADIENE	U	U	UJ	420	Qualify	1,2
135-Z40A-PB-14.0-14.5	JC35023-1A	NAPHTHALENE	U	61.5	61.5	42		
135-Z40A-PB-14.0-14.5	JC35023-1A	PHENANTHRENE	U	91.3	91.3	42		
135-Z40A-PB-14.0-14.5	JC35023-1A	PYRENE	U	77.5	77.5	42		
135-Z40A-SW-E-10.0-10.5	JC35023-10A	2-METHYLNAPHTHALENE	U	12300	12300	830		
135-Z40A-SW-E-10.0-10.5	JC35023-10A	ACENAPHTHENE	U	1720	1720	41		
135-Z40A-SW-E-10.0-10.5	JC35023-10A	ANTHRACENE	U	953	953	41		
135-Z40A-SW-E-10.0-10.5	JC35023-10A	BENZO(A)ANTHRACENE	U	761	761	41		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-Z40A-SW-E-10.0-10.5	JC35023-10A	BENZO(A)PYRENE	U	865	865	41		
135-Z40A-SW-E-10.0-10.5	JC35023-10A	BENZO(B)FLUORANTHENE	U	849	849	41		
135-Z40A-SW-E-10.0-10.5	JC35023-10A	BENZO(G,H,I)PERYLENE	U	562	562	41		
135-Z40A-SW-E-10.0-10.5	JC35023-10A	BENZO(K)FLUORANTHENE	U	333	333	41		
135-Z40A-SW-E-10.0-10.5	JC35023-10A	CHRYSENE	U	998	998	41		
135-Z40A-SW-E-10.0-10.5	JC35023-10A	DIBENZO(A,H)ANTHRACENE	U	176	176	41		
135-Z40A-SW-E-10.0-10.5	JC35023-10A	DIBENZOFURAN	U	1860	1860	83		
135-Z40A-SW-E-10.0-10.5	JC35023-10A	FLUORANTHENE	U	1390	1390	41		
135-Z40A-SW-E-10.0-10.5	JC35023-10A	FLUORENE	U	3390	3390	41		
135-Z40A-SW-E-10.0-10.5	JC35023-10A	INDENO(1,2,3-CD)PYRENE	U	599	599	41		
135-Z40A-SW-E-10.0-10.5	JC35023-10A	PHENANTHRENE	U	6440	6440	410		
135-Z40A-SW-E-10.0-10.5	JC35023-10A	PYRENE	U	1310	1310	41		
135-Z40A-SW-E-12.0-12.5	JC35023-9A	1-1'-BIPHENYL	U	64.6J	64.6	78	Qualify	3
135-Z40A-SW-E-12.0-12.5	JC35023-9A	2-METHYLNAPHTHALENE	U	2550	2550	78		
135-Z40A-SW-E-12.0-12.5	JC35023-9A	ACENAPHTHENE	U	536	536	39		
135-Z40A-SW-E-12.0-12.5	JC35023-9A	ANTHRACENE	U	241	241	39		
135-Z40A-SW-E-12.0-12.5	JC35023-9A	BENZO(A)ANTHRACENE	U	142	142	39		
135-Z40A-SW-E-12.0-12.5	JC35023-9A	BENZO(A)PYRENE	U	98.8	98.8	39		
135-Z40A-SW-E-12.0-12.5	JC35023-9A	BENZO(B)FLUORANTHENE	U	98.6	98.6	39		
135-Z40A-SW-E-12.0-12.5	JC35023-9A	BENZO(G,H,I)PERYLENE	U	60.7	60.7	39		
135-Z40A-SW-E-12.0-12.5	JC35023-9A	BENZO(K)FLUORANTHENE	U	35.3J	35.3	39	Qualify	3
135-Z40A-SW-E-12.0-12.5	JC35023-9A	CHRYSENE	U	189	189	39		
135-Z40A-SW-E-12.0-12.5	JC35023-9A	DIBENZOFURAN	U	643	643	78		
135-Z40A-SW-E-12.0-12.5	JC35023-9A	FLUORANTHENE	U	270	270	39		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-Z40A-SW-E-12.0-12.5	JC35023-9A	FLUORENE	U	1270	1270	39		
135-Z40A-SW-E-12.0-12.5	JC35023-9A	INDENO(1,2,3-CD)PYRENE	U	56.7	56.7	39		
135-Z40A-SW-E-12.0-12.5	JC35023-9A	NAPHTHALENE	U	285	285	39		
135-Z40A-SW-E-12.0-12.5	JC35023-9A	PHENANTHRENE	U	1560	1560	39		
135-Z40A-SW-E-12.0-12.5	JC35023-9A	PYRENE	U	382	382	39		
135-Z40A-SW-E-6.0-6.5	JC35023-12A	2-METHYLNAPHTHALENE	U	4070	4070	85		
135-Z40A-SW-E-6.0-6.5	JC35023-12A	ACENAPHTHENE	U	1550	1550	43		
135-Z40A-SW-E-6.0-6.5	JC35023-12A	ANTHRACENE	U	1420	1420	43		
135-Z40A-SW-E-6.0-6.5	JC35023-12A	BENZO(A)ANTHRACENE	U	1670	1670	43		
135-Z40A-SW-E-6.0-6.5	JC35023-12A	BENZO(A)PYRENE	U	1430	1430	43		
135-Z40A-SW-E-6.0-6.5	JC35023-12A	BENZO(B)FLUORANTHENE	U	1470	1470	43		
135-Z40A-SW-E-6.0-6.5	JC35023-12A	BENZO(G,H,I)PERYLENE	U	827	827	43		
135-Z40A-SW-E-6.0-6.5	JC35023-12A	BENZO(K)FLUORANTHENE	U	512	512	43		
135-Z40A-SW-E-6.0-6.5	JC35023-12A	CHRYSENE	U	2140	2140	43		
135-Z40A-SW-E-6.0-6.5	JC35023-12A	DIBENZO(A,H)ANTHRACENE	U	265	265	43		
135-Z40A-SW-E-6.0-6.5	JC35023-12A	DIBENZOFURAN	U	1520	1520	85		
135-Z40A-SW-E-6.0-6.5	JC35023-12A	FLUORANTHENE	U	3650	3650	43		
135-Z40A-SW-E-6.0-6.5	JC35023-12A	FLUORENE	U	3300	3300	43		
135-Z40A-SW-E-6.0-6.5	JC35023-12A	INDENO(1,2,3-CD)PYRENE	U	860	860	43		
135-Z40A-SW-E-6.0-6.5	JC35023-12A	NAPHTHALENE	U	687	687	43		
135-Z40A-SW-E-6.0-6.5	JC35023-12A	PHENANTHRENE	U	5300	5300	210		
135-Z40A-SW-E-6.0-6.5	JC35023-12A	PYRENE	U	3220	3220	43		
135-Z40A-SW-E-8.0-8.5	JC35023-11A	2-METHYLNAPHTHALENE	U	10100	10100	420		
135-Z40A-SW-E-8.0-8.5	JC35023-11A	ACENAPHTHENE	U	2410	2410	42		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-Z40A-SW-E-8.0-8.5	JC35023-11A	ANTHRACENE	U	1200	1200	42		
135-Z40A-SW-E-8.0-8.5	JC35023-11A	BENZO(A)ANTHRACENE	U	677	677	42		
135-Z40A-SW-E-8.0-8.5	JC35023-11A	BENZO(A)PYRENE	U	506	506	42		
135-Z40A-SW-E-8.0-8.5	JC35023-11A	BENZO(B)FLUORANTHENE	U	506	506	42		
135-Z40A-SW-E-8.0-8.5	JC35023-11A	BENZO(G,H,I)PERYLENE	U	312	312	42		
135-Z40A-SW-E-8.0-8.5	JC35023-11A	BENZO(K)FLUORANTHENE	U	166	166	42		
135-Z40A-SW-E-8.0-8.5	JC35023-11A	CHRYSENE	U	989	989	42		
135-Z40A-SW-E-8.0-8.5	JC35023-11A	DIBENZO(A,H)ANTHRACENE	U	105	105	42		
135-Z40A-SW-E-8.0-8.5	JC35023-11A	DIBENZOFURAN	U	2740	2740	85		
135-Z40A-SW-E-8.0-8.5	JC35023-11A	FLUORANTHENE	U	1470	1470	42		
135-Z40A-SW-E-8.0-8.5	JC35023-11A	FLUORENE	U	6020	6020	210		
135-Z40A-SW-E-8.0-8.5	JC35023-11A	INDENO(1,2,3-CD)PYRENE	U	289	289	42		
135-Z40A-SW-E-8.0-8.5	JC35023-11A	PHENANTHRENE	U	8750	8750	210		
135-Z40A-SW-E-8.0-8.5	JC35023-11A	PYRENE	U	1350	1350	42		
135-Z40A-SW-N-10.0-10.5	JC35023-14A	1-1'-BIPHENYL	U	83.5J	83.5	96	Qualify	3
135-Z40A-SW-N-10.0-10.5	JC35023-14A	2-METHYLNAPHTHALENE	U	250	250	96		
135-Z40A-SW-N-10.0-10.5	JC35023-14A	3+4-METHYLPHENOL	U	1050	1050	96		
135-Z40A-SW-N-10.0-10.5	JC35023-14A	ACENAPHTHENE	U	524	524	48		
135-Z40A-SW-N-10.0-10.5	JC35023-14A	ACENAPHTHYLENE	U	650	650	48		
135-Z40A-SW-N-10.0-10.5	JC35023-14A	ANTHRACENE	U	1560	1560	48		
135-Z40A-SW-N-10.0-10.5	JC35023-14A	BENZALDEHYDE	U	112J	112	240	Qualify	3
135-Z40A-SW-N-10.0-10.5	JC35023-14A	BENZO(A)ANTHRACENE	U	5330	5330	240		
135-Z40A-SW-N-10.0-10.5	JC35023-14A	BENZO(A)PYRENE	U	4920	4920	240		
135-Z40A-SW-N-10.0-10.5	JC35023-14A	BENZO(B)FLUORANTHENE	U	6130	6130	240		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-Z40A-SW-N-10.0-10.5	JC35023-14A	BENZO(G,H,I)PERYLENE	U	3190	3190	48		
135-Z40A-SW-N-10.0-10.5	JC35023-14A	BENZO(K)FLUORANTHENE	U	2240	2240	240		
135-Z40A-SW-N-10.0-10.5	JC35023-14A	CARBAZOLE	U	176	176	96		
135-Z40A-SW-N-10.0-10.5	JC35023-14A	CHRYSENE	U	5130	5130	240		
135-Z40A-SW-N-10.0-10.5	JC35023-14A	DIBENZO(A,H)ANTHRACENE	U	764	764	48		
135-Z40A-SW-N-10.0-10.5	JC35023-14A	DIBENZOFURAN	U	373	373	96		
135-Z40A-SW-N-10.0-10.5	JC35023-14A	FLUORANTHENE	U	9540	9540	240		
135-Z40A-SW-N-10.0-10.5	JC35023-14A	FLUORENE	U	866	866	48		
135-Z40A-SW-N-10.0-10.5	JC35023-14A	INDENO(1,2,3-CD)PYRENE	U	3500	3500	48		
135-Z40A-SW-N-10.0-10.5	JC35023-14A	NAPHTHALENE	U	874	874	48		
135-Z40A-SW-N-10.0-10.5	JC35023-14A	PHENANTHRENE	U	7550	7550	240		
135-Z40A-SW-N-10.0-10.5	JC35023-14A	PHENOL	U	113	113	96		
135-Z40A-SW-N-10.0-10.5	JC35023-14A	PYRENE	U	12500	12500	240		
135-Z40A-SW-N-12.0-12.5	JC35023-13A	1-1'-BIPHENYL	U	2720	2720	210		
135-Z40A-SW-N-12.0-12.5	JC35023-13A	2-METHYLNAPHTHALENE	U	41900	41900	1000		
135-Z40A-SW-N-12.0-12.5	JC35023-13A	3+4-METHYLPHENOL	U	861	861	210		
135-Z40A-SW-N-12.0-12.5	JC35023-13A	ACENAPHTHENE	U	2110	2110	100		
135-Z40A-SW-N-12.0-12.5	JC35023-13A	ANTHRACENE	U	640	640	100		
135-Z40A-SW-N-12.0-12.5	JC35023-13A	BENZO(A)ANTHRACENE	U	403	403	100		
135-Z40A-SW-N-12.0-12.5	JC35023-13A	BENZO(A)PYRENE	U	203	203	100		
135-Z40A-SW-N-12.0-12.5	JC35023-13A	BENZO(B)FLUORANTHENE	U	192	192	100		
135-Z40A-SW-N-12.0-12.5	JC35023-13A	BENZO(G,H,I)PERYLENE	U	108	108	100		
135-Z40A-SW-N-12.0-12.5	JC35023-13A	BENZO(K)FLUORANTHENE	U	60.8J	60.8	100	Qualify	3
135-Z40A-SW-N-12.0-12.5	JC35023-13A	CHRYSENE	U	531	531	100		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-Z40A-SW-N-12.0-12.5	JC35023-13A	DIBENZO(A,H)ANTHRACENE	U	46.7J	46.7	100	Qualify	3
135-Z40A-SW-N-12.0-12.5	JC35023-13A	DIBENZOFURAN	U	2430	2430	210		
135-Z40A-SW-N-12.0-12.5	JC35023-13A	FLUORANTHENE	U	767	767	100		
135-Z40A-SW-N-12.0-12.5	JC35023-13A	FLUORENE	U	4290	4290	100		
135-Z40A-SW-N-12.0-12.5	JC35023-13A	INDENO(1,2,3-CD)PYRENE	U	107	107	100		
135-Z40A-SW-N-12.0-12.5	JC35023-13A	NAPHTHALENE	U	3450	3450	100		
135-Z40A-SW-N-12.0-12.5	JC35023-13A	PHENANTHRENE	U	4510	4510	100		
135-Z40A-SW-N-12.0-12.5	JC35023-13A	PYRENE	U	1020	1020	100		
135-Z40A-SW-N-8.0-8.5	JC35023-15A	1-1'-BIPHENYL	U	21.6J	21.6	95	Qualify	3
135-Z40A-SW-N-8.0-8.5	JC35023-15A	2-METHYLNAPHTHALENE	U	45.2J	45.2	95	Qualify	3
135-Z40A-SW-N-8.0-8.5	JC35023-15A	3+4-METHYLPHENOL	U	354	354	95		
135-Z40A-SW-N-8.0-8.5	JC35023-15A	ACENAPHTHENE	U	20.6J	20.6	47	Qualify	3
135-Z40A-SW-N-8.0-8.5	JC35023-15A	ANTHRACENE	U	43.5J	43.5	47	Qualify	3
135-Z40A-SW-N-8.0-8.5	JC35023-15A	BENZALDEHYDE	U	78.9J	78.9	240	Qualify	3
135-Z40A-SW-N-8.0-8.5	JC35023-15A	BENZO(A)ANTHRACENE	U	197	197	47		
135-Z40A-SW-N-8.0-8.5	JC35023-15A	BENZO(A)PYRENE	U	142	142	47		
135-Z40A-SW-N-8.0-8.5	JC35023-15A	BENZO(B)FLUORANTHENE	U	249	249	47		
135-Z40A-SW-N-8.0-8.5	JC35023-15A	BENZO(G,H,I)PERYLENE	U	126	126	47		
135-Z40A-SW-N-8.0-8.5	JC35023-15A	BENZO(K)FLUORANTHENE	U	74.8	74.8	47		
135-Z40A-SW-N-8.0-8.5	JC35023-15A	CARBAZOLE	U	23.3J	23.3	95	Qualify	3
135-Z40A-SW-N-8.0-8.5	JC35023-15A	CHRYSENE	U	226	226	47		
135-Z40A-SW-N-8.0-8.5	JC35023-15A	DIBENZO(A,H)ANTHRACENE	U	31.1J	31.1	47	Qualify	3
135-Z40A-SW-N-8.0-8.5	JC35023-15A	DIBENZOFURAN	U	26.9J	26.9	95	Qualify	3
135-Z40A-SW-N-8.0-8.5	JC35023-15A	FLUORANTHENE	U	298	298	47		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-Z40A-SW-N-8.0-8.5	JC35023-15A	FLUORENE	U	36.6J	36.6	47	Qualify	3
135-Z40A-SW-N-8.0-8.5	JC35023-15A	INDENO(1,2,3-CD)PYRENE	U	135	135	47		
135-Z40A-SW-N-8.0-8.5	JC35023-15A	NAPHTHALENE	U	205	205	47		
135-Z40A-SW-N-8.0-8.5	JC35023-15A	PHENANTHRENE	U	158	158	47		
135-Z40A-SW-N-8.0-8.5	JC35023-15A	PYRENE	U	331	331	47		
135-Z40A-SW-S-10.0-10.5	JC35023-3A	1-1'-BIPHENYL	U	34.6J	34.6	92	Qualify	3
135-Z40A-SW-S-10.0-10.5	JC35023-3A	2-METHYLNAPHTHALENE	U	139	139	92		
135-Z40A-SW-S-10.0-10.5	JC35023-3A	ACENAPHTHENE	U	371	371	46		
135-Z40A-SW-S-10.0-10.5	JC35023-3A	ACENAPHTHYLENE	U	404	404	46		
135-Z40A-SW-S-10.0-10.5	JC35023-3A	ANTHRACENE	U	887	887	46		
135-Z40A-SW-S-10.0-10.5	JC35023-3A	BENZO(A)ANTHRACENE	U	2300	2300	46		
135-Z40A-SW-S-10.0-10.5	JC35023-3A	BENZO(A)PYRENE	U	2000	2000	46		
135-Z40A-SW-S-10.0-10.5	JC35023-3A	BENZO(B)FLUORANTHENE	U	1900	1900	46		
135-Z40A-SW-S-10.0-10.5	JC35023-3A	BENZO(G,H,I)PERYLENE	U	1190	1190	46		
135-Z40A-SW-S-10.0-10.5	JC35023-3A	BENZO(K)FLUORANTHENE	U	692	692	46		
135-Z40A-SW-S-10.0-10.5	JC35023-3A	CARBAZOLE	U	209	209	92		
135-Z40A-SW-S-10.0-10.5	JC35023-3A	CHRYSENE	U	2640	2640	46		
135-Z40A-SW-S-10.0-10.5	JC35023-3A	DIBENZO(A,H)ANTHRACENE	U	324	324	46		
135-Z40A-SW-S-10.0-10.5	JC35023-3A	DIBENZOFURAN	U	130	130	92		
135-Z40A-SW-S-10.0-10.5	JC35023-3A	FLUORANTHENE	U	3150	3150	46		
135-Z40A-SW-S-10.0-10.5	JC35023-3A	FLUORENE	U	320	320	46		
135-Z40A-SW-S-10.0-10.5	JC35023-3A	INDENO(1,2,3-CD)PYRENE	U	1180	1180	46		
135-Z40A-SW-S-10.0-10.5	JC35023-3A	NAPHTHALENE	U	200	200	46		
135-Z40A-SW-S-10.0-10.5	JC35023-3A	PHENANTHRENE	U	3760	3760	46		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-Z40A-SW-S-10.0-10.5	JC35023-3A	PYRENE	U	4650	4650	92		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	1-1'-BIPHENYL	U	131	131	95		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	2-METHYLNAPHTHALENE	U	501	501	95		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	3+4-METHYLPHENOL	U	426	426	95		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	ACENAPHTHENE	U	2520	2520	47		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	ACENAPHTHYLENE	U	708	708	47		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	ANTHRACENE	U	1760	1760	47		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	BENZALDEHYDE	U	339	339	240		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	BENZO(A)ANTHRACENE	U	2650	2650	47		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	BENZO(A)PYRENE	U	2360	2360	47		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	BENZO(B)FLUORANTHENE	U	2200	2200	47		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	BENZO(G,H,I)PERYLENE	U	1140	1140	47		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	BENZO(K)FLUORANTHENE	U	654	654	47		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	CARBAZOLE	U	305	305	95		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	CHRYSENE	U	3270	3270	47		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	DIBENZO(A,H)ANTHRACENE	U	342	342	47		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	DIBENZOFURAN	U	437	437	95		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	FLUORANTHENE	U	4610	4610	47		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	FLUORENE	U	2400	2400	47		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	INDENO(1,2,3-CD)PYRENE	U	1160	1160	47		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	NAPHTHALENE	U	1040	1040	47		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	PHENANTHRENE	U	7550	7550	240		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	PHENOL	U	115	115	95		
135-Z40A-SW-S-12.0-12.5	JC35023-2A	PYRENE	U	6350	6350	240		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-Z40A-SW-S-6.0-6.5	JC35023-5A	2-METHYLNAPHTHALENE	U	52.4J	52.4	85	Qualify	3
135-Z40A-SW-S-6.0-6.5	JC35023-5A	ACENAPHTHENE	U	99.7	99.7	42		
135-Z40A-SW-S-6.0-6.5	JC35023-5A	ACENAPHTHYLENE	U	67.6	67.6	42		
135-Z40A-SW-S-6.0-6.5	JC35023-5A	ANTHRACENE	U	293	293	42		
135-Z40A-SW-S-6.0-6.5	JC35023-5A	BENZALDEHYDE	U	48.3J	48.3	210	Qualify	3
135-Z40A-SW-S-6.0-6.5	JC35023-5A	BENZO(A)ANTHRACENE	U	776	776	42		
135-Z40A-SW-S-6.0-6.5	JC35023-5A	BENZO(A)PYRENE	U	652	652	42		
135-Z40A-SW-S-6.0-6.5	JC35023-5A	BENZO(B)FLUORANTHENE	U	664	664	42		
135-Z40A-SW-S-6.0-6.5	JC35023-5A	BENZO(G,H,I)PERYLENE	U	419	419	42		
135-Z40A-SW-S-6.0-6.5	JC35023-5A	BENZO(K)FLUORANTHENE	U	244	244	42		
135-Z40A-SW-S-6.0-6.5	JC35023-5A	CARBAZOLE	U	59.0J	59.0	85	Qualify	3
135-Z40A-SW-S-6.0-6.5	JC35023-5A	CHRYSENE	U	913	913	42		
135-Z40A-SW-S-6.0-6.5	JC35023-5A	DIBENZO(A,H)ANTHRACENE	U	128	128	42		
135-Z40A-SW-S-6.0-6.5	JC35023-5A	DIBENZOFURAN	U	45.5J	45.5	85	Qualify	3
135-Z40A-SW-S-6.0-6.5	JC35023-5A	FLUORANTHENE	U	1130	1130	42		
135-Z40A-SW-S-6.0-6.5	JC35023-5A	FLUORENE	U	88.3	88.3	42		
135-Z40A-SW-S-6.0-6.5	JC35023-5A	INDENO(1,2,3-CD)PYRENE	U	421	421	42		
135-Z40A-SW-S-6.0-6.5	JC35023-5A	NAPHTHALENE	U	103	103	42		
135-Z40A-SW-S-6.0-6.5	JC35023-5A	PHENANTHRENE	U	1300	1300	42		
135-Z40A-SW-S-6.0-6.5	JC35023-5A	PYRENE	U	1710	1710	42		
135-Z40A-SW-S-8.0-8.5	JC35023-4A	1-1'-BIPHENYL	U	24.7J	24.7	85	Qualify	3
135-Z40A-SW-S-8.0-8.5	JC35023-4A	2-METHYLNAPHTHALENE	U	93.8	93.8	85		
135-Z40A-SW-S-8.0-8.5	JC35023-4A	ACENAPHTHENE	U	290	290	42		
135-Z40A-SW-S-8.0-8.5	JC35023-4A	ACENAPHTHYLENE	U	198	198	42		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-Z40A-SW-S-8.0-8.5	JC35023-4A	ANTHRACENE	U	556	556	42		
135-Z40A-SW-S-8.0-8.5	JC35023-4A	BENZO(A)ANTHRACENE	U	1550	1550	42		
135-Z40A-SW-S-8.0-8.5	JC35023-4A	BENZO(A)PYRENE	U	1290	1290	42		
135-Z40A-SW-S-8.0-8.5	JC35023-4A	BENZO(B)FLUORANTHENE	U	1460	1460	42		
135-Z40A-SW-S-8.0-8.5	JC35023-4A	BENZO(G,H,I)PERYLENE	U	765	765	42		
135-Z40A-SW-S-8.0-8.5	JC35023-4A	BENZO(K)FLUORANTHENE	U	485	485	42		
135-Z40A-SW-S-8.0-8.5	JC35023-4A	CARBAZOLE	U	210	210	85		
135-Z40A-SW-S-8.0-8.5	JC35023-4A	CHRYSENE	U	1710	1710	42		
135-Z40A-SW-S-8.0-8.5	JC35023-4A	DIBENZO(A,H)ANTHRACENE	U	232	232	42		
135-Z40A-SW-S-8.0-8.5	JC35023-4A	DIBENZOFURAN	U	114	114	85		
135-Z40A-SW-S-8.0-8.5	JC35023-4A	FLUORANTHENE	U	2460	2460	42		
135-Z40A-SW-S-8.0-8.5	JC35023-4A	FLUORENE	U	233	233	42		
135-Z40A-SW-S-8.0-8.5	JC35023-4A	INDENO(1,2,3-CD)PYRENE	U	849	849	42		
135-Z40A-SW-S-8.0-8.5	JC35023-4A	NAPHTHALENE	U	175	175	42		
135-Z40A-SW-S-8.0-8.5	JC35023-4A	PHENANTHRENE	U	2400	2400	42		
135-Z40A-SW-S-8.0-8.5	JC35023-4A	PYRENE	U	3210	3210	42		
135-Z40A-SW-W-10.0-10.5	JC35023-7A	1-1'-BIPHENYL	U	28.4J	28.4	85	Qualify	3
135-Z40A-SW-W-10.0-10.5	JC35023-7A	2-METHYLNAPHTHALENE	U	284	284	85		
135-Z40A-SW-W-10.0-10.5	JC35023-7A	ACENAPHTHENE	U	60.5	60.5	42		
135-Z40A-SW-W-10.0-10.5	JC35023-7A	ACENAPHTHYLENE	U	67.6	67.6	42		
135-Z40A-SW-W-10.0-10.5	JC35023-7A	ANTHRACENE	U	120	120	42		
135-Z40A-SW-W-10.0-10.5	JC35023-7A	BENZO(A)ANTHRACENE	U	403	403	42		
135-Z40A-SW-W-10.0-10.5	JC35023-7A	BENZO(A)PYRENE	U	373	373	42		
135-Z40A-SW-W-10.0-10.5	JC35023-7A	BENZO(B)FLUORANTHENE	U	456	456	42		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-Z40A-SW-W-10.0-10.5	JC35023-7A	BENZO(G,H,I)PERYLENE	U	299	299	42		
135-Z40A-SW-W-10.0-10.5	JC35023-7A	BENZO(K)FLUORANTHENE	U	140	140	42		
135-Z40A-SW-W-10.0-10.5	JC35023-7A	CARBAZOLE	U	38.8J	38.8	85	Qualify	3
135-Z40A-SW-W-10.0-10.5	JC35023-7A	CHRYSENE	U	506	506	42		
135-Z40A-SW-W-10.0-10.5	JC35023-7A	DIBENZO(A,H)ANTHRACENE	U	87.1	87.1	42		
135-Z40A-SW-W-10.0-10.5	JC35023-7A	DIBENZOFURAN	U	59.6J	59.6	85	Qualify	3
135-Z40A-SW-W-10.0-10.5	JC35023-7A	FLUORANTHENE	U	616	616	42		
135-Z40A-SW-W-10.0-10.5	JC35023-7A	FLUORENE	U	80.9	80.9	42		
135-Z40A-SW-W-10.0-10.5	JC35023-7A	INDENO(1,2,3-CD)PYRENE	U	289	289	42		
135-Z40A-SW-W-10.0-10.5	JC35023-7A	NAPHTHALENE	U	139	139	42		
135-Z40A-SW-W-10.0-10.5	JC35023-7A	PHENANTHRENE	U	443	443	42		
135-Z40A-SW-W-10.0-10.5	JC35023-7A	PYRENE	U	750	750	42		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	1-1'-BIPHENYL	U	380	380	91		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	2-METHYLNAPHTHALENE	U	5670	5670	180		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	ACENAPHTHENE	U	538	538	46		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	ANTHRACENE	U	388	388	46		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	BENZO(A)ANTHRACENE	U	929	929	46		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	BENZO(A)PYRENE	U	865	865	46		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	BENZO(B)FLUORANTHENE	U	1050	1050	46		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	BENZO(G,H,I)PERYLENE	U	469	469	46		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	BENZO(K)FLUORANTHENE	U	310	310	46		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	CARBAZOLE	U	94.2	94.2	91		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	CHRYSENE	U	928	928	46		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	DIBENZO(A,H)ANTHRACENE	U	152	152	46		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (ug/kg)	Laboratory Sample Result (ug/kg)	Validation Sample Result (ug/kg)	RL (ug/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-Z40A-SW-W-12.0-12.5	JC35023-6A	DIBENZOFURAN	U	391	391	91		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	FLUORANTHENE	U	2010	2010	46		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	FLUORENE	U	666	666	46		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	INDENO(1,2,3-CD)PYRENE	U	541	541	46		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	NAPHTHALENE	U	639	639	46		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	PHENANTHRENE	U	2180	2180	46		
135-Z40A-SW-W-12.0-12.5	JC35023-6A	PYRENE	U	1690	1690	46		
135-Z40A-SW-W-8.0-8.5	JC35023-8A	1-1'-BIPHENYL	U	103	103	87		
135-Z40A-SW-W-8.0-8.5	JC35023-8A	2-METHYLNAPHTHALENE	U	729	729	87		
135-Z40A-SW-W-8.0-8.5	JC35023-8A	ACENAPHTHENE	U	1310	1310	43		
135-Z40A-SW-W-8.0-8.5	JC35023-8A	ACENAPHTHYLENE	U	131	131	43		
135-Z40A-SW-W-8.0-8.5	JC35023-8A	ANTHRACENE	U	3690	3690	43		
135-Z40A-SW-W-8.0-8.5	JC35023-8A	BENZO(A)ANTHRACENE	U	11300	11300	430		
135-Z40A-SW-W-8.0-8.5	JC35023-8A	BENZO(A)PYRENE	U	6840	6840	430		
135-Z40A-SW-W-8.0-8.5	JC35023-8A	BENZO(B)FLUORANTHENE	U	7870	7870	430		
135-Z40A-SW-W-8.0-8.5	JC35023-8A	BENZO(G,H,I)PERYLENE	U	3970	3970	43		
135-Z40A-SW-W-8.0-8.5	JC35023-8A	BENZO(K)FLUORANTHENE	U	2570	2570	430		
135-Z40A-SW-W-8.0-8.5	JC35023-8A	CARBAZOLE	U	639	639	87		
135-Z40A-SW-W-8.0-8.5	JC35023-8A	CHRYSENE	U	12200	12200	430		
135-Z40A-SW-W-8.0-8.5	JC35023-8A	DIBENZO(A,H)ANTHRACENE	U	1240	1240	43		
135-Z40A-SW-W-8.0-8.5	JC35023-8A	DIBENZOFURAN	U	410	410	87		
135-Z40A-SW-W-8.0-8.5	JC35023-8A	FLUORANTHENE	U	14300	14300	430		
135-Z40A-SW-W-8.0-8.5	JC35023-8A	FLUORENE	U	970	970	43		
135-Z40A-SW-W-8.0-8.5	JC35023-8A	INDENO(1,2,3-CD)PYRENE	U	3870	3870	43		

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135-Z40A-SW-W-8.0-8.5	JC35023-8A	NAPHTHALENE	U	834	834	43		
135-Z40A-SW-W-8.0-8.5	JC35023-8A	PHENANTHRENE	U	28200	28200	430		
135-Z40A-SW-W-8.0-8.5	JC35023-8A	PYRENE	U	29700	29700	430		

Note: A “U” under Method Blank column indicates a nondetect result.

NJDEP Laboratory Footnote

1. The reported value was qualified because the MS/MSD spike recovery was below the lower control limit.
2. The reported or nondetect value was qualified because the MS/MSD was outside control limits for RPD.
3. The reported result was greater than the MDL but less than the RL and therefore was estimated.

Attachment B

Data Validation Report Form

DATA VALIDATION REPORT FORM – METALS ANALYSIS

Client Name: PPG Industries	**Project Number:** 60482955.GA.RA.OSS.2016
Site Location: Site 135 South Pit Bottom, Jersey City, NJ	**Project Manager:** Scott Mikaelian
Laboratory: SGS/Accutest, Dayton, NJ	**Type of Validation:** Limited
Laboratory Job No: JC35023A	**Date Checked:** 01/23/2017
Validator: Charlene Livingston Flint	**Peer:** Sharon McKechnie

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X			
Field I.D. included?	X			
Laboratory I.D. included?	X			
Did data package sample IDs match sample IDs on COC?	X			
Did electronic data deliverable (EDD) sample IDs match COC sample IDs?	X			
Did data package sample IDs match electronic data deliverable (EDD) sample IDs?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6ºC?	X			5.5 ºC
Signed COCs included?	X			
Date of sample collection included?	X			
Date of sample digestion included?	X			
Date of analysis included?	X			
Holding time met QC criteria? (Metals -180 days from sample collection; Mercury - 28 days from sample collection. If HT exceeded by 10 days R all results.	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			
Definitions: MDL - Method Detection Limit; %R - Percent Recovery; RL - Reporting Limit; RPD - Relative Percent Difference; RSD - Relative Standard Deviation :Corr - Correlation Coefficient.				

ITEM	YES	NO	N/A	COMMENTS
Sample dilutions?	X			See Table
Initial calibration documentation included in lab package?			X	N/A for Limited Validation
1) Calibrate daily or each time instrument is set up.			X	
2) ICP (6010) -Blank plus 1 standard?			X	
3) Hg (7470/7471) -Blank plus 5 standards?			X	
Initial Calibration Verification Standard (ICV) for ICP (6010) and Initial Calibration Check Standard (ICCS) for Hg (7470/7471) included in lab package?			X	N/A for Limited Validation
1) Analyzed immediately after initial calibration?			X	
2) %R criteria met? (90-110%)			X	
3) Spot check ICV/ICCS results for several analytes.			X	
Continuing Calibration Verification Standard (CCV) for ICP (6010) and Calibration Check Standard (CCS) for Hg (7470/7471) included in Lab Package?			X	N/A for Limited Validation
1) Analyzed immediately after each ICV/ICC/CB and after every 10 samples?			X	
2) CCS and CCV from independent source and at mid- level of calibration curve.			X	
3) %R criteria met? (90-110%R).			X	
4) Spot check CCV/CCS results for several analytes.			X	
Low Calibration Standard (CRI) included in Lab Package?			X	N/A for Limited Validation
1) %R criteria met?			X	
Calibration Blanks			X	N/A for Limited Validation
1) Analyzed after daily calibration and after each ICV/ICC/CCV/CCS and after every 10 samples?			X	
2) Absolute value <3xIDL?			X	
Method Blank Included in Lab Package?	X			
1) Method blank analyzed with each preparation batch or every SDG, or 1/20 samples?	X			
2) Method blank analyzed 1/20 samples	X			
3) MB results nondetect?		X		See Table
4) Negative MB result reported?	X			Aq MB reported thallium with neg drift. SR ND. Result estimated. See table

ITEM	YES	NO	N/A	COMMENTS
Field Blanks/Equipment Blanks Included in Lab Package?	X			135-FB20170107
1) FB/EB result non-detect?	X			Zinc and Mercury negated by MB. No positive EB compounds remained.
ICP Interference Check Sample (ICS) included in Lab Package?			X	N/A for Limited Validation
1) Analyzed at beginning of analytical run?			X	
2) %R criteria met? (80-120%)			X	
3) Spot check accuracy of %Rs			X	
Matrix Spike/Matrix Spike Duplicate Data Included in Lab Package?	X			JC35023-1A
1) MS/MSD %R (75-125%R) and RPD (20%) criteria met?		X		See table
2) Was a sample spiked at the frequency of 1/batch or 20 samples?	X			
3) Was the MS performed on a site sample?		X		
4) Was the MS performed on a FB/EB or TB?			X	
Post Digestion Spike			X	N/A for Limited Validation
1) %R criteria met? (75-125%R)			X	
2) Was the spike performed on a FB/EB or TB?			X	
3) Was a sample spiked at the frequency of 1/batch or 20 samples?			X	
Laboratory Duplicate Data Included in Lab Package?		X		
Aqueous - RPD criteria met? (20%)			X	
Soil - RPD criteria met? (35%)			X	
Was a Laboratory Control Sample (LCS) Included in Lab Package?	X			
1) LCS %R criteria met? (80-120%R).	X			
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples?	X			
Serial Dilution			X	N/A for Limited Validation
1) %D (<10%R) criteria met? -			X	
2) Was the frequency 1/batch or 20 samples?			X	
3) Was a site sample used?			X	
4) Was a FB/EB or TB used?			X	

ITEM	YES	NO	N/A	COMMENTS
5) Spot check accuracy of %Ds.			X	
Field Duplicate Data included in Lab Package?		X		
Aqueous - RPD criteria met? (20%)			X	
Soil - RPD criteria met? (35%)			X	
Percent Solids data included in Lab Package?	X			See Table
1) % Solids criteria (Reg 2 criteria) met? (>/=50%)	X			
Chromium result greater than corresponding hexavalent chromium result where applicable?	X			Hexavalent chromium results in JC35023,R

Blanks

Analyte	Result	3X	10X	Actions	Associated Samples
Soil Method Blank MP97997	**(mg/kg)**	**(mg/kg)**	**(mg/kg)**		
Aluminum	1.9	5.7	19	OK, >10X MB	All soil samples
Arsenic	0.22	0.66	2.2	OK, >10X MB	All soil samples
Beryllium	0.039	0.117	0.39	OK, >10X MB	All soil samples
Calcium	8.4	25.2	84	OK, >10X MB	All soil samples
Chromium	0.13	0.39	1.3	OK, >10X MB	All soil samples
Iron	2.4	7.2	24	OK, >10X MB	All soil samples
Manganese	0.039	0.117	0.39	OK, >10X MB	All soil samples
Sodium	16.6	49.8	166	OK, >10X MB	All soil samples
Aqueous Method Blank MP98001/MP98027	**(ug/l)**	**(ug/l)**	**(ug/l)**		
Barium	6.9	20.7	69.0	Ok, ND	135-FB20170107
Beryllium	0.30	0.9	3.0	Ok, ND	135-FB20170107
Calcium	99.7	299.1	997.0	Ok, ND	135-FB20170107
Chromium	1	3	10.0	Ok, ND	135-FB20170107
Manganese	1	3	10.0	Ok, ND	135-FB20170107
Nickel	1.6	4.8	16.0	Ok, ND	135-FB20170107
Sodium	92	276	920.0	Ok, ND	135-FB20170107
Thallium	-2.2	-6.6	-22.0	Negative drift, SR ND, Estimate UJ	135-FB20170107
Zinc	2.1	6.3	21.0	<3x amount in MB, Negate (UB)	135-FB20170107
Mercury	0.048	0.144	0.5	<3x amount in MB, Negate (UB)	135-FB20170107

Matrix Spikes

Sample ID	Lab ID	Analyte	MS % R	MSD % R	Lower Limit	Upper Limit	RPD	RPD Limit	Actions
135-Z40A-PB-14.0-14.5	JC35023-1A	Aluminum	**263.3**	**180.1**	75	125	17.9	20	**Estimate (J)** result in parent sample high bias
135-Z40A-PB-14.0-14.5	JC35023-1A	Antimony	**72.8**	**68.4**	75	125	6.2	20	**Estimate (UJ)** result in parent sample low bias
135-Z40A-PB-14.0-14.5	JC35023-1A	Calcium	**153.9**	114.2	75	125	**20.2**	20	**Estimate (J)** result in parent sample high bias. RPD high **Estimate (J)**
135-Z40A-PB-14.0-14.5	JC35023-1A	Iron	**188.7**	102.4	75	125	15.4	20	Low spike amount vs amount in sample. No qualification.
135-Z40A-PB-14.0-14.5	JC35023-1A	Magnesium	**158.0**	115.2	75	125	18.0	20	**Estimate (J)** result in parent sample high bias
135-Z40A-PB-14.0-14.5	JC35023-1A	Manganese	**126.3**	115.6	75	125	6.3	20	**Estimate (J)** result in parent sample high bias
135-Z40A-PB-14.0-14.5	JC35023-1A	Potassium	**150.7**	**126.7**	75	125	13.2	20	**Estimate (J)** result in parent sample high bias
135-Z40A-PB-14.0-14.5	JC35023-1A	Zinc	**126.3**	112.4	75	125	7.0	20	**Estimate (J)** result in parent sample high bias

Sample Dilutions

Sample	Lab ID	Dilution	Analyte
135-Z40A-SW-S-12.0-12.5	JC35023-2A	5	Mercury
		3	Zinc
		3	Vanadium
		3	Chromium
		3	Antimony
		3	Lead
135-Z40A-SW-S-10.0-10.5	JC35023-3A	2	Mercury
		5	Manganese
		5	Selenium
		5	Thallium
		5	Silver
135-Z40A-SW-S-8.0-8.5	JC35023-4A	5	Mercury
135-Z40A-SW-S-6.0-6.5	JC35023-5A	2	Mercury
135-Z40A-SW-W-12.0-12.5	JC35023-6A	20	Mercury
		2	Lead
135-Z40A-SW-W-10.0-10.5	JC35023-7A	10	Mercury
135-Z40A-SW-W-8.0-8.5	JC35023-8A	5	Cadmium
		10	Thallium
		5	Silver
		10	Manganese
		5	Chromium
		5	Zinc
		5	Selenium
		5	Mercury
135-Z40A-SW-E-10.0-10.5	JC35023-10A	2	Silver
		2	Cobalt
		2	Beryllium
		2	Thallium

Sample	Lab ID	Dilution	Analyte
135-Z40A-SW-N-12.0-12.5	JC35023-13A	5	Mercury
135-Z40A-SW-N-10.0-10.5	JC35023-14A	2	Lead
135-Z40A-SW-N-8.0-8.5	JC35023-15A	3	Lead

Percent Solids

Sample ID	Percent Solids (%)	Status
135-Z40A-SW-N-10.0-10.5	68.6	ok @50%
135-Z40A-SW-N-12.0-12.5	64.1	ok @50%
135-Z40A-SW-N-8.0-8.5	70.2	ok @50%
135-Z40A-SW-S-10.0-10.5	72.1	ok @50%
135-Z40A-SW-S-12.0-12.5	69.5	ok @50%
135-Z40A-SW-S-6.0-6.5	78.8	ok @50%
135-Z40A-SW-E-8.0-8.5	77.9	ok @50%
135-Z40A-SW-E-6.0-6.5	77.6	ok @50%
135-Z40A-SW-E-12.0-12.5	82.7	ok @50%
135-Z40A-SW-E-10.0-10.5	80.4	ok @50%
135-Z40A-PB-14.0-14.5	78.4	ok @50%
135-Z40A-SW-S-8.0-8.5	78	ok @50%
135-Z40A-SW-W-10.0-10.5	76.8	ok @50%
135-Z40A-SW-W-12.0-12.5	72.4	ok @50%
135-Z40A-SW-W-8.0-8.5	76.4	ok @50%

DATA VALIDATION REPORT FORM – VOC ANALYSIS

Client Name: PPG Industries	**Project Number:** 60482955.GA.RA.OSS.2016
Site Location: Site 135 South Pit Bottom, Jersey City, NJ	**Project Manager:** Scott Mikaelian
Laboratory: SGS/Accutest, Dayton, NJ	**Type of Validation:** Limited
Laboratory Job No: JC35023A	**Date Checked:** 01/23/2017
Validator: Charlene Livingston Flint	**Peer:** Sharon McKechnie

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?		X		See table.
Field I.D. included?	X			
Laboratory I.D. included?	X			
Did data package sample IDs match sample IDs on COC?	X			
Did electronic data deliverable (EDD) sample IDs match COC sample IDs?	X			
Did data package sample IDs match electronic data deliverable (EDD) sample IDs?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6ºC?	X			5.5 ºC
Signed COCs included?	X			
Date of sample collection included?	X			
Date of analysis included?	X			
Holding time to analysis met criteria? Aqueous (unpreserved) - 7 days from collection to analysis. Aqueous (preserved) - 14 days from collection to analysis. Soils - 14 days from collection to analysis.	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			
Definitions: MDL - Method Detection Limit; %R - Percent Recovery; RL - Reporting Limit; RPD - Relative Percent Difference; RSD - Relative Standard Deviation :Corr - Correlation Coefficient.				

ITEM	YES	NO	N/A	COMMENTS
Sample dilutions?		X		No dilutions
Method Blank Included in Lab Package?	X			
1) Method blank analyzed with each preparation batch?	X			
2) Absolute value should not exceed RL.	X			
Trip Blanks/Field Blanks/Equipment Blanks Included in Lab Package?	X			135-FB20170107
1) TB/FB/EB results non-detect?	X			
Surrogate Data Included?	X			
1) Is %R criteria (laboratory criteria) met?	X			
Matrix Spike/Matrix Spike Duplicate Data Included in Lab Package?	X			JC35023-1A MS only
1) %R and RPD (laboratory criteria) met?	X			
2) Was the spike concentration at the same concentration as the LCS?		X		MS spiked at 55 ug/kg vs 50 ug/kg for the LCS
3) Was a sample spiked at the frequency of 1 per 20 samples?	X			
Laboratory Duplicate Data Included in Lab Package?	X			JC35023-3A
1) %RPD (laboratory criteria) met?	X			Results ND
Was a Laboratory Control Sample (LCS) Included in Lab Package?	X			
1) LCS %R criteria met? (laboratory criteria)		X		See table.
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples?	X			
Field Duplicate Data included in Lab Package?		X		
1) %RPD criteria (Reg 2 criteria) met?			X	
Percent Solids data included in Lab Package?	X			
1) %Solids criteria (Reg 2 criteria) met? (>/=50%)	X			See Table

LCS

Sample ID	Analyte	LCS % Recovery	Limits %	Associated samples	Action
VE10421-BS	Freon 113	147	67-136	135-Z40A-SW-E-8.0-8.5	None, SR ND
V2A7405-BS	4-Methyl-2-pentanone	142	77-123	135-FB20170107	None, SR ND

VOC Reporting Limits

Sample ID	Lab ID	Analyte	Result	Detect Flag	Units	DIGWSSL Action Level
135-Z40A-SW-E-10.0-10.5	JC35023-10A	1,1,2,2-TETRACHLOROETHANE	15	N	ug/kg	7
135-Z40A-SW-E-10.0-10.5	JC35023-10A	1,1,2-TRICHLOROETHANE	21	N	ug/kg	20
135-Z40A-SW-E-10.0-10.5	JC35023-10A	1,1-DICHLOROETHYLENE	9.8	N	ug/kg	8
135-Z40A-SW-E-10.0-10.5	JC35023-10A	1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	31	N	ug/kg	5
135-Z40A-SW-E-10.0-10.5	JC35023-10A	1,2-DIBROMOETHANE(EDB)	15	N	ug/kg	5
135-Z40A-SW-E-10.0-10.5	JC35023-10A	1,2-DICHLOROETHANE	11	N	ug/kg	5
135-Z40A-SW-E-10.0-10.5	JC35023-10A	1,2-DICHLOROPROPANE	20	N	ug/kg	5
135-Z40A-SW-E-10.0-10.5	JC35023-10A	BENZENE	7.7	N	ug/kg	5
135-Z40A-SW-E-10.0-10.5	JC35023-10A	BROMODICHLOROMETHANE	9.7	N	ug/kg	5
135-Z40A-SW-E-10.0-10.5	JC35023-10A	CARBON TETRACHLORIDE	11	N	ug/kg	5
135-Z40A-SW-E-10.0-10.5	JC35023-10A	CHLORODIBROMOMETHANE	9.6	N	ug/kg	5
135-Z40A-SW-E-10.0-10.5	JC35023-10A	CIS-1,3-DICHLOROPROPENE	13	N	ug/kg	5
135-Z40A-SW-E-10.0-10.5	JC35023-10A	DICHLOROMETHANE	64	N	ug/kg	10
135-Z40A-SW-E-10.0-10.5	JC35023-10A	TETRACHLOROETHENE	18	N	ug/kg	5
135-Z40A-SW-E-10.0-10.5	JC35023-10A	TRANS-1,3-DICHLOROPROPENE	14	N	ug/kg	5
135-Z40A-SW-E-10.0-10.5	JC35023-10A	TRICHLOROETHYLENE	12	N	ug/kg	10
135-Z40A-SW-E-10.0-10.5	JC35023-10A	VINYL CHLORIDE	13	N	ug/kg	5
135-Z40A-SW-E-12.0-12.5	JC35023-9A	1,1,2,2-TETRACHLOROETHANE	14	N	ug/kg	7
135-Z40A-SW-E-12.0-12.5	JC35023-9A	1,1-DICHLOROETHYLENE	9.1	N	ug/kg	8
135-Z40A-SW-E-12.0-12.5	JC35023-9A	1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	29	N	ug/kg	5
135-Z40A-SW-E-12.0-12.5	JC35023-9A	1,2-DIBROMOETHANE(EDB)	14	N	ug/kg	5

Sample ID	Lab ID	Analyte	Result	Detect Flag	Units	DIGWSSL Action Level
135-Z40A-SW-E-12.0-12.5	JC35023-9A	1,2-DICHLOROETHANE	10	N	ug/kg	5
135-Z40A-SW-E-12.0-12.5	JC35023-9A	1,2-DICHLOROPROPANE	18	N	ug/kg	5
135-Z40A-SW-E-12.0-12.5	JC35023-9A	BENZENE	7.1	N	ug/kg	5
135-Z40A-SW-E-12.0-12.5	JC35023-9A	BROMODICHLOROMETHANE	9	N	ug/kg	5
135-Z40A-SW-E-12.0-12.5	JC35023-9A	CARBON TETRACHLORIDE	9.8	N	ug/kg	5
135-Z40A-SW-E-12.0-12.5	JC35023-9A	CHLORODIBROMOMETHANE	8.9	N	ug/kg	5
135-Z40A-SW-E-12.0-12.5	JC35023-9A	CIS-1,3-DICHLOROPROPENE	12	N	ug/kg	5
135-Z40A-SW-E-12.0-12.5	JC35023-9A	DICHLOROMETHANE	59	N	ug/kg	10
135-Z40A-SW-E-12.0-12.5	JC35023-9A	TETRACHLOROETHENE	17	N	ug/kg	5
135-Z40A-SW-E-12.0-12.5	JC35023-9A	TRANS-1,3-DICHLOROPROPENE	13	N	ug/kg	5
135-Z40A-SW-E-12.0-12.5	JC35023-9A	TRICHLOROETHYLENE	11	N	ug/kg	10
135-Z40A-SW-E-12.0-12.5	JC35023-9A	VINYL CHLORIDE	12	N	ug/kg	5
135-Z40A-SW-E-6.0-6.5	JC35023-12A	1,1,2,2-TETRACHLOROETHANE	19	N	ug/kg	7
135-Z40A-SW-E-6.0-6.5	JC35023-12A	1,1,2-TRICHLOROETHANE	25	N	ug/kg	20
135-Z40A-SW-E-6.0-6.5	JC35023-12A	1,1-DICHLOROETHYLENE	12	N	ug/kg	8
135-Z40A-SW-E-6.0-6.5	JC35023-12A	1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	38	N	ug/kg	5
135-Z40A-SW-E-6.0-6.5	JC35023-12A	1,2-DIBROMOETHANE(EDB)	19	N	ug/kg	5
135-Z40A-SW-E-6.0-6.5	JC35023-12A	1,2-DICHLOROETHANE	13	N	ug/kg	5
135-Z40A-SW-E-6.0-6.5	JC35023-12A	1,2-DICHLOROPROPANE	24	N	ug/kg	5
135-Z40A-SW-E-6.0-6.5	JC35023-12A	BENZENE	9.3	N	ug/kg	5
135-Z40A-SW-E-6.0-6.5	JC35023-12A	BROMODICHLOROMETHANE	12	N	ug/kg	5
135-Z40A-SW-E-6.0-6.5	JC35023-12A	CARBON TETRACHLORIDE	13	N	ug/kg	5
135-Z40A-SW-E-6.0-6.5	JC35023-12A	CHLORODIBROMOMETHANE	12	N	ug/kg	5
135-Z40A-SW-E-6.0-6.5	JC35023-12A	CIS-1,3-DICHLOROPROPENE	15	N	ug/kg	5
135-Z40A-SW-E-6.0-6.5	JC35023-12A	DICHLOROMETHANE	78	N	ug/kg	10
135-Z40A-SW-E-6.0-6.5	JC35023-12A	TETRACHLOROETHENE	22	N	ug/kg	5
135-Z40A-SW-E-6.0-6.5	JC35023-12A	TRANS-1,3-DICHLOROPROPENE	17	N	ug/kg	5
135-Z40A-SW-E-6.0-6.5	JC35023-12A	TRICHLOROETHYLENE	15	N	ug/kg	10
135-Z40A-SW-E-6.0-6.5	JC35023-12A	VINYL CHLORIDE	16	N	ug/kg	5
135-Z40A-SW-E-8.0-8.5	JC35023-11A	1,1,2,2-TETRACHLOROETHANE	16	N	ug/kg	7

Sample ID	Lab ID	Analyte	Result	Detect Flag	Units	DIGWSSL Action Level
135-Z40A-SW-E-8.0-8.5	JC35023-11A	1,1,2-TRICHLOROETHANE	22	N	ug/kg	20
135-Z40A-SW-E-8.0-8.5	JC35023-11A	1,1-DICHLOROETHYLENE	10	N	ug/kg	8
135-Z40A-SW-E-8.0-8.5	JC35023-11A	1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	33	N	ug/kg	5
135-Z40A-SW-E-8.0-8.5	JC35023-11A	1,2-DIBROMOETHANE(EDB)	17	N	ug/kg	5
135-Z40A-SW-E-8.0-8.5	JC35023-11A	1,2-DICHLOROETHANE	12	N	ug/kg	5
135-Z40A-SW-E-8.0-8.5	JC35023-11A	1,2-DICHLOROPROPANE	21	N	ug/kg	5
135-Z40A-SW-E-8.0-8.5	JC35023-11A	BENZENE	8.2	N	ug/kg	5
135-Z40A-SW-E-8.0-8.5	JC35023-11A	BROMODICHLOROMETHANE	10	N	ug/kg	5
135-Z40A-SW-E-8.0-8.5	JC35023-11A	CARBON TETRACHLORIDE	11	N	ug/kg	5
135-Z40A-SW-E-8.0-8.5	JC35023-11A	CHLORODIBROMOMETHANE	10	N	ug/kg	5
135-Z40A-SW-E-8.0-8.5	JC35023-11A	CIS-1,3-DICHLOROPROPENE	13	N	ug/kg	5
135-Z40A-SW-E-8.0-8.5	JC35023-11A	DICHLOROMETHANE	69	N	ug/kg	10
135-Z40A-SW-E-8.0-8.5	JC35023-11A	TETRACHLOROETHENE	19	N	ug/kg	5
135-Z40A-SW-E-8.0-8.5	JC35023-11A	TRANS-1,3-DICHLOROPROPENE	15	N	ug/kg	5
135-Z40A-SW-E-8.0-8.5	JC35023-11A	TRICHLOROETHYLENE	13	N	ug/kg	10
135-Z40A-SW-E-8.0-8.5	JC35023-11A	VINYL CHLORIDE	14	N	ug/kg	5
135-Z40A-SW-N-12.0-12.5	JC35023-13A	1,1,2,2-TETRACHLOROETHANE	31	N	ug/kg	7
135-Z40A-SW-N-12.0-12.5	JC35023-13A	1,1,2-TRICHLOROETHANE	41	N	ug/kg	20
135-Z40A-SW-N-12.0-12.5	JC35023-13A	1,1-DICHLOROETHYLENE	20	N	ug/kg	8
135-Z40A-SW-N-12.0-12.5	JC35023-13A	1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	62	N	ug/kg	5
135-Z40A-SW-N-12.0-12.5	JC35023-13A	1,2-DIBROMOETHANE(EDB)	31	N	ug/kg	5
135-Z40A-SW-N-12.0-12.5	JC35023-13A	1,2-DICHLOROETHANE	22	N	ug/kg	5
135-Z40A-SW-N-12.0-12.5	JC35023-13A	1,2-DICHLOROPROPANE	40	N	ug/kg	5
135-Z40A-SW-N-12.0-12.5	JC35023-13A	BENZENE	15	N	ug/kg	5
135-Z40A-SW-N-12.0-12.5	JC35023-13A	BROMODICHLOROMETHANE	19	N	ug/kg	5
135-Z40A-SW-N-12.0-12.5	JC35023-13A	BROMOMETHANE	62	N	ug/kg	40
135-Z40A-SW-N-12.0-12.5	JC35023-13A	CARBON TETRACHLORIDE	21	N	ug/kg	5
135-Z40A-SW-N-12.0-12.5	JC35023-13A	CHLORODIBROMOMETHANE	19	N	ug/kg	5
135-Z40A-SW-N-12.0-12.5	JC35023-13A	CIS-1,3-DICHLOROPROPENE	25	N	ug/kg	5
135-Z40A-SW-N-12.0-12.5	JC35023-13A	DICHLOROMETHANE	130	N	ug/kg	10

Sample ID	Lab ID	Analyte	Result	Detect Flag	Units	DIGWSSL Action Level
135-Z40A-SW-N-12.0-12.5	JC35023-13A	TETRACHLOROETHENE	36	N	ug/kg	5
135-Z40A-SW-N-12.0-12.5	JC35023-13A	TRANS-1,3-DICHLOROPROPENE	28	N	ug/kg	5
135-Z40A-SW-N-12.0-12.5	JC35023-13A	TRIBROMOMETHANE	34	N	ug/kg	30
135-Z40A-SW-N-12.0-12.5	JC35023-13A	TRICHLOROETHYLENE	24	N	ug/kg	10
135-Z40A-SW-N-12.0-12.5	JC35023-13A	VINYL CHLORIDE	26	N	ug/kg	5

Sample ID	Lab ID	Analyte	Result	Detect Flag	Units	RDCSRS Action level
135-Z40A-SW-E-10.0-10.5	JC35023-10A	1,2-DIBROMOETHANE(EDB)	15	N	ug/kg	8
135-Z40A-SW-E-12.0-12.5	JC35023-9A	1,2-DIBROMOETHANE(EDB)	14	N	ug/kg	8
135-Z40A-SW-E-6.0-6.5	JC35023-12A	1,2-DIBROMOETHANE(EDB)	19	N	ug/kg	8
135-Z40A-SW-E-8.0-8.5	JC35023-11A	1,2-DIBROMOETHANE(EDB)	17	N	ug/kg	8
135-Z40A-SW-N-12.0-12.5	JC35023-13A	1,2-DIBROMOETHANE(EDB)	31	N	ug/kg	8

Percent Solids

Refer to table in Metals Section Above

DATA VALIDATION REPORT FORM – SVOC ANALYSIS

Client Name: PPG Industries	**Project Number:** 60482955.GA.RA.OSS.2016
Site Location: Site 135 South Pit Bottom, Jersey City, NJ	**Project Manager:** Scott Mikaelian
Laboratory: SGS/Accutest, Dayton, NJ	**Type of Validation:** Limited
Laboratory Job No: JC35023A	**Date Checked:** 01/23/2017
Validator: Charlene Livingston Flint	**Peer:** Sharon McKechnie

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?		X		See table.
Field I.D. included?	X			
Laboratory I.D. included?	X			
Did data package sample IDs match sample IDs on COC?	X			
Did electronic data deliverable (EDD) sample IDs match COC sample IDs?	X			
Did data package sample IDs match electronic data deliverable (EDD) sample IDs?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6ºC?	X			5.5 ºC
Signed COCs included?	X			
Date of sample collection included?	X			
Date of sample extraction included?	X			
Date of analysis included?	X			
Holding time to analysis met criteria?	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			
Definitions: MDL - Method Detection Limit; %R - Percent Recovery; RL - Reporting Limit; RPD - Relative Percent Difference; RSD - Relative Standard Deviation :Corr - Correlation Coefficient.				

ITEM	YES	NO	N/A	COMMENTS
Sample dilutions?	X			See table
Method Blank Included in Lab Package?	X			
1) Method blank analyzed with each preparation batch?	X			
2) Absolute value should not exceed RL.	X			
Trip Blanks/Field Blanks/Equipment Blanks Included in Lab Package?	X			135-FB20170107
1) TB/FB/EB results non-detect?	X			
Surrogate Data Included?	X			
1) Is %R criteria (laboratory criteria) met?	X			
Matrix Spike/Matrix Spike Duplicate Data Included in Lab Package?	X			JC35023-1A
1) %R and RPD (laboratory criteria) met?		X		See table.
2) Was the spike concentration at the same concentration as the LCS?		X		LCS spiked at 1670/3330 ug/kg MS spiked at 2120/4240 ug/kg, MSD spiked at 2090/4180 ug/kg.
3) Was a sample spiked at the frequency of 1 per 20 samples?	X			
Was a Laboratory Control Sample (LCS) Included in Lab Package?	X			
1) LCS %R criteria met? (laboratory criteria)	X			
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples?	X			
Field Duplicate Data included in Lab Package?		X		
1) %RPD criteria (Reg 2 criteria) met?			X	
Percent Solids data included in Lab Package?	X			
1) %Solids criteria (Reg 2 criteria) met? (>/=50%)	X			See Table

Sample Dilutions

Sample	Lab ID	Dilution	Analyte
135-Z40A-SW-E-10.0-10.5	JC35023-10A	10	Phenanthrene
		10	2-Methylnaphthalene
135-Z40A-SW-E-8.0-8.5	JC35023-11A	5	Phenanthrene
		5	2-Methylnaphthalene
		5	Fluorene
135-Z40A-SW-E-6.0-6.5	JC35023-12A	5	Phenanthrene
135-Z40A-SW-N-12.0-12.5	JC35023-13A	2	All analytes with the exception of 2-methylnaphthalene
		10	2-Methylnaphthalene
135-Z40A-SW-N-10.0-10.5	JC35023-14A	5	Phenanthrene
		5	Benzo(b)fluoranthene
		5	Fluoranthene
		5	Benzo(a)anthracene
		5	Benzo(a)pyrene
		5	Benzo(k)fluoranthene
		5	Pyrene
		5	Chrysene
135-Z40A-SW-S-12.0-12.5	JC35023-2A	5	Phenanthrene
		5	Pyrene
135-Z40A-SW-S-10.0-10.5	JC35023-3A	5	Pyrene
135-Z40A-SW-W-12.0-12.5	JC35023-6A	2	2-Methylnaphthalene
135-Z40A-SW-W-8.0-8.5	JC35023-8A	10	Pyrene
		10	Fluoranthene
		10	Chrysene
		10	Phenanthrene
		10	Benzo(a)pyrene
		10	Benzo(k)fluoranthene
		10	Benzo(a)anthracene
		10	Benzo(b)fluoranthene

Matrix Spikes

Sample ID	Lab ID	Analyte	MS % R	MSD % R	Lower Limit	Upper Limit	RPD	RPD Limit	Actions
135-Z40A-PB-14.0-14.5	JC35023-1A	Hexachlorocyclopentadiene	11	**5**	10	127	**83**	46	**Estimate (UJ)**

SVOC Reporting Limits

Sample ID	Lab ID	Analyte	Result	Detect Flag	Units	DIGWSSL Action Level
135-Z40A-SW-N-12.0-12.5	JC35023-13A	2,4-DINITROPHENOL	390	N	ug/kg	300

Percent Solids

Refer to table in Metals Section Above

AECOM
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Data Validation Report

Project:	Al Smith Building Post Remediation Sampling	
Laboratory:	SGS/Accutest, Dayton, NJ	
Laboratory Job No.:	JC49444 and JC49444R	
Analysis/Method:	Hexavalent Chromium SW846 3060A/7196A	
Validation Level:	Full	
Site Location/Address:	70 Carteret Avenue, Jersey City, NJ	
AECOM Project No:	60540263.GA.RA.COS.2017.ASM	
Prepared by:	Sharon McKechnie /AECOM	Completed on: 08/29/2017
Reviewed by:	Mary Kozik/AECOM	File Name: JC49444_R_2017-08-29_DVR-F

Introduction

The data were reviewed in accordance with the FSP-QAPP and the following NJDEP validation Standard Operating Procedure(s) (SOP):

- NJDEP Office of Data Quality SOP 5.A.10, Rev 3 (September 2009), SOP for Analytical Data Validation of Hexavalent Chromium - for USEPA SW-846 Method 3060A, USEPA SW-846 Method 7196A.

The results of quality control data analyzed with site samples were used to assess the overall reliability of the data. The following qualifiers were used to identify data quality issues:

U: Indicates the analyte was not detected in the sample above the sample reporting limit.

J: Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

J+: Indicates the analyte was positively identified; the associated numerical value is an estimated quantity with a potential high bias.

J-: Indicates the analyte was positively identified; the associated numerical value is an estimated quantity with a potential low bias.

UJ: Indicates the analyte was not detected above the reporting limit and the reporting limit was approximate.

UB: The analyte concentration is less than or equal to three (3) times the concentration in the associated method/prep blank. The presence of the analyte in the sample is negated (UB) due to laboratory contamination.

JB: The analyte concentration is greater than three (3) times, but less than or equal to ten (10) times the concentration in the associated method/prep blank. The presence of that analyte in

the sample is considered "real". The concentration is quantitatively qualified (JB) due to method blank contamination.

R: The sample result was rejected due to serious deficiencies; the presence or absence of the analyte could not be confirmed.

RA: The sample result was rejected but is still considered usable.

Sample Information

The samples listed below were collected by AECOM on August 23, 2017 as part of the PPG - Al Smith Building Post Remediation sampling at 70 Carteret Avenue, Jersey City, New Jersey. Only the sample and parameter listed below was validated.

Field ID	Laboratory ID	Matrix	Fraction
135-FB20170823 (Equipment Blank)	JC49444-1	Aqueous	Hexavalent Chromium
135-Y42A-SW-E-5.7-6.2	JC49444-3,3R	Soil	Hexavalent Chromium
135-Y42A-SW-E-5.7-6.2X (Field Duplicate of 135-Y42A-SW-E-5.7-6.2)	JC49444-4,4R	Soil	Hexavalent Chromium
135-Y42A-SW-E-7.7-8.2	JC49444-2,2R	Soil	Hexavalent Chromium

The sample was collected following the procedures detailed in the Work Order for PPG - Al Smith Building Post Remediation sampling at 70 Carteret Avenue, Jersey City, New Jersey and the Field Sampling Plan/Quality Assurance Project Plan for Non-Residential and Residential Chromium Sites Hudson County, New Jersey (December 2011).

General Comments

The data package was complete. Quality control (QC) issues identified during validation are discussed below. Refer to the Soil Target Analyte Summary Hit List(s) in Attachment A for a listing of all detected results, qualified results, and associated qualifications, where applicable. The nonconformances for each section discussed below are presented in Attachment B.

Chain-of-Custody/Sample Receipt

The following discrepancies were noted between the samples and the COC upon sample arrival at the laboratory:

- The sample collection time on the bottle label for sample 135-Y42A-SW-E-5.7-6.2 was 10:56 vs. COC time of 10:54; and

- Sample ID 135-Y42A-SW-E-5.7-6.2**X** was incorrectly listed on the COC as 135-Y42A-SW-E-5.7-6.2. Sample bottle labels were correct.

The data was reported with the information on the bottle labels in both of the above noted cases. No action other than this note was necessary.

MS Results

Sample 135-Y42A-SW-E-7.7-8.2 (JC49444-2) was selected for the soil matrix spike (MS) analysis and used for supporting data quality recommendations. The soluble and insoluble MS recoveries from the initial batch were 71.7% and 96.3%, respectively. The soluble MS recovery did not meet the

quality control (QC) criteria of 75-125%R. The post digestion spike (PDS) recovery was 85.0%, which met the PDS criteria of 85-115%.

Based on the low MS recovery, the MS and associated samples were reanalyzed using Method 7196. The soluble and insoluble MS recoveries from the re-analysis were 68.8% and 90.6% respectively. The soluble MS recovery did not meet the QC criteria of 75-125%R. The PDS recovery was 77.9%, which did not meet the PDS criteria of 85-115%. After pH adjustment, the PDS recovery was 87.1%.

Since the soluble MS and PDS recoveries were outside the acceptable QC limits, additional parameters were analyzed to determine if possible matrix interferences could be the cause for the poor matrix spike recovery. All the soil samples were tested for pH and oxidation reduction potential (ORP) and plotted on an Eh/pH phase diagram. From this diagram, the source sample for the matrix spike analysis was plotted above the phase change line, indicating an oxidizing potential with the sample matrix capable of supporting hexavalent chromium. Analyses for ferrous iron, sulfide screen, and total organic carbon (TOC) were performed on the MS source sample to confirm the oxidizing/reducing potential within the sample matrix. The sulfide screen was reported as nondetect, indicating no reducing agents within the sample matrix; however, the ferrous iron (0.43%) and the TOC results (132,000 mg/Kg) were positive, indicating potential reducing agents within the sample matrix.

Since the soluble MS recoveries from the initial and reanalysis were outside the MS QC requirements, but both insoluble MS recoveries met the QC criteria, the hexavalent chromium results in all soil samples were qualified as estimated biased low (J-) due to the low MS recoveries. The highest detected hexavalent chromium result between the initial analysis and reanalysis was reported.

No additional qualification was applied based on the low reanalysis PDS recovery since the initial analysis PDS recovery was acceptable.

Field Duplicate Precision

The relative percent difference (RPD) for field duplicate (FD) pair 135-Y42A-SW-E-5.7-6.2/ 135-Y42A-SW-E-5.7-6.2X exceeded the QC criteria. The sample result was greater than four times the RL and the duplicate result was less than four times the RL. Therefore, all soil results were qualified as estimated (J).

Data Quality and Usability

In general, these data appear to be valid and may be used for decision-making purposes, no data were rejected. Qualified and detected results are presented in Attachments A and B.

The hexavalent chromium soil results in this SDG are usable as estimated values with a cumulative indeterminate bias due to low MS recovery and field duplicate precision. The MS sample matrix appears to be oxidizing based on the Eh-pH diagram; however TOC and ferrous iron are present. The highest detected hexavalent chromium result between the initial analysis and reanalysis was reported.

ATTACHMENTS

Attachment A: Target Analyte Summary Hit List(s)

Attachment B: Data Validation Report Form

Attachment A

Target Analyte Summary Hit List(s)

Soil Target Analyte Summary Hit List (Hexavalent Chromium)

Site Name Al Smith Building Post Remediation Sampling
Sampling Date August 23, 2017
Lab Name/ID SGS/Accutest, Dayton, NJ
SDG No JC49444 and JC49444R
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID 135-FB20170823

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
135-Y42A-SW-E-5.7-6.2	JC49444-3R	CHROMIUM (HEXAVALENT)	U	2.7	2.7 J	0.48	Qualify	1,2
135-Y42A-SW-E-5.7-6.2X	JC49444-4R	CHROMIUM (HEXAVALENT)	U	1.5	1.5 J	0.47	Qualify	1,2
135-Y42A-SW-E-7.7-8.2	JC49444-2	CHROMIUM (HEXAVALENT)	U	2.0	2.0 J	0.60	Qualify	1,2

Note: A “U” under Method Blank column indicates a nondetect result.
A “U” under the Laboratory Sample Result and Validation Sample Result columns indicates a nondetect result at the RL.

NJDEP Laboratory Footnote

1. The result was estimated because the MS recoveries were less than 75%, but at least one recovery was above 50%.
2. The result was estimated because the field duplicate precision did not meet QC criteria.

Attachment B

Data Validation Report Form

Client Name: PPG Industries	**Project Number:** 60540263.GA.RA.COS.2017.ASM
Site Location: Al Smith Building Post Remediation Sampling, Jersey City, NJ	**Project Manager:** Lindi Higgins
Laboratory: SGS/Accutest, Dayton, NJ	**Type of Validation:** Full
Laboratory Job No: JC49444 and JC49444R	**Date Checked:** 08/29/2017
Validator: Sharon McKechnie	**Peer:** Mary Kozik

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X			
Field I.D. included?	X			
Laboratory I.D. included?	X			
Did data package sample IDs match sample IDs on COC?	X			
Did electronic data deliverable (EDD) sample IDs match COC sample IDs?	X			
Did data package sample IDs match electronic data deliverable (EDD) sample IDs?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6 ºC?	X			2.6 ºC
Signed COCs included?	X			
Date of sample collection included?	X			
Date of sample digestion included?	X			
Holding time to digestion met criteria? (Soils -30 days from collection to digestion.)	X			
Date of analysis included?	X			
Holding time to analysis met criteria? (Soils -168 hours from digestion to analysis; Aqueous - 24 hours from collection to analysis.	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			
Definitions: MDL - Method Detection Limit; %R - Percent Recovery; RL - Reporting Limit; RPD - Relative Percent Difference; RSD - Relative Standard Deviation :Corr - Correlation Coefficient.				

ITEM	YES	NO	N/A	COMMENTS
Initial calibration documentation included in lab package?	X			
1) Blank plus 4 standards (7196A) or blank plus 3 standards (7199)	X			
2) Correlation coefficient of =0.995 (7196A) or =0.999 (7199)	X			
3) Calibrate daily or each time instrument is set up.	X			
Calibration Check Standard (CCS) for 7196A and Quality Control Sample (QCS) for 7199 Included in Lab Package?	X			
1) %R criteria met? (90 - 110%)	X			
2) Correct frequency of one per every 10 samples	X			
3) CCS and QCS from independent source and at mid- level of calibration curve	X			
Calibration Blanks	X			
1) Analyzed prior to initial calibration standards and after each CCS/QCS?	X			
2) Absolute value should not exceed MDL.	X			
Method Blank, Field Blanks and/or Equipment Blanks Included in Lab Package?	X			
1) Method blank analyzed with each preparation batch?	X			
2) Absolute value should not exceed MDL.	X			
Eh and pH Data	X			
1) Eh and pH data was included and plotted for all samples?	X			
Soluble Matrix Spike Data Included in Lab Package?	X			JC49444-2, -2R
1) Soluble Matrix %R criteria met? (75-125%R).		X		See table
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?		X		Initial and rerun MS spiked at 59.7 mg/kg and 59.5 mg/kg, respectively. No impact on data.
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Insoluble Matrix Spike Data Included in Lab Package?	X			
1) Insoluble Matrix %R criteria met? (75-125%R).	X			See table
2) Was the spike concentration around 400 to 800 mg/Kg?		X		Initial and rerun MS spiked at 1700 mg/kg. No impact on data.
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			

ITEM	YES	NO	N/A	COMMENTS
Post Digestion Spike	X			JC49444-2, -2R
1) Post Digestion Spike %R criteria met? (85-115%R).	X			See table (initial run met QC criteria)
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?	X			
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Sample Duplicate Data Included in Lab Package?	X			JC49444-2, -2R
1) RPD criteria met? (RPD < 20%) if both results are ≥4x RL or control limit of± RL if both results are <4xRL.	X			See Table
2) Was a sample duplicate analyzed at the frequency of 1 per batch or 20 samples?	X			
Was a Laboratory Control Sample (LCS) Included in Lab Package?	X			
1) %R criteria met? (80-120%R).	X			
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples?	X			
Were any Field Duplicate samples submitted with this SDG?	X			JC49444-3R, -4R
1) RPD criteria met? (RPD < 20%) if both results are ≥4x RL or control limit of± RL if both results are <4xRL.		X		See Table
Were all sample quantitation and reporting requirements met?	X			
1) Were all solid samples reported with percent solids > 50%?	X			
2) Were any samples analyzed or reported with dilutions?		X		
Miscellaneous Items	X			
1) For soils by 7196A, was the pH within a range of 7.0-8.0?	X			
2) For soils by 7199, was the pH within a range of 9.0-9.5?			X	
3) For aqueous by 7196A, was the pH with a range of 1.5-2.5?	X			
4) For soils (3060A), was the digestion temperature 90-95C for at least 60 minutes?	X			
5) For 7199, was each sample injected twice and was the RPD ≤20?			X	

Matrix Spikes

Sample ID	Lab ID	Analyte	Matrix Spike	% Recovery	Lower Limit	Upper Limit	PDS %/pH Adj PDS%	PDS Limit
135-Y42A-SW-E-7.7-8.2	JC49444-2	CHROMIUM (HEXAVALENT)	Soluble	71.7	75	125	89.0/NA	85-115
135-Y42A-SW-E-7.7-8.2	JC49444-2	CHROMIUM (HEXAVALENT)	Insoluble	96.3				
135-Y42A-SW-E-7.7-8.2	JC49444-2R	CHROMIUM (HEXAVALENT)	Soluble	68.8			77.9/87.1	
135-Y42A-SW-E-7.7-8.2	JC49444-2R	CHROMIUM (HEXAVALENT)	Insoluble	90.6				

Lab Duplicates

Sample ID	Batch	Analyte	Sample Result	Duplicate Result	QL	Units	Abs/Diff	Actions
135-Y42A-SW-E-7.7-8.2	Initial	CHROMIUM (HEXAVALENT)	2.0	1.6	0.60	mg/kg	0.40	Both <4X QL, Absolute Difference <QL; Accept
135-Y42A-SW-E-7.7-8.2	Reanalysis	CHROMIUM (HEXAVALENT)	1.8	2.1	0.60	mg/kg	0.30	

Field Duplicates

Sample ID	Duplicate ID	Analyte	Sample Result	Duplicate Result	QL	Units	RPD %	Actions
135-Y42A-SW-E-5.7-6.2	135-Y42A-SW-E-5.7-6.2X	CHROMIUM (HEXAVALENT)	2.7	1.5	0.48	mg/kg	57.1	One >4X QL, One <4X QL; Estimate J

SDG#: JC49444/ Method 7196	x - concentration	y - response
Batch: GN68649		
Cr+6 ICAL 8/25/17	0	0
Soil	0.01	0.008
(p. 64 of data pkg)	0.05	0.041
	0.1	0.081
	0.3	0.240
	0.5	0.404
	0.8	0.647
	1	0.805

				(p. 64 of data pkg)
AECOM Calculated Offset	0.00008	OK	Reported Offset	0.00008
AECOM Slope	0.8063	OK	Reported Slope	0.8063
AECOM Calculated r	0.99999	OK	Reported r	0.99999

LCS calculation	**GP7390-B1**	**P. 17,64**		
Background Absorbance	0			
Total absorbance	0.744			
Total absorbance - background	0.744			
Instrument Concentration	0.923			
Sample weight (mg/kg)	0.0025			
Final Volume (L)	0.1			
Dilution Factor	1			
AECOM Calculated LCS Result (mg/Kg)	36.9	OK	Reported Result (mg/Kg)	36.9

%R = Found/True*100	**GP7390-B1**	**P. 17,64**		
True Value (mg/kg)	40			
AECOM Calculated %R	92.3	OK	Reported %R	92.3

MS calculation	**GP7390-S1**	**P. 19,64**	**JC49444-2R**	
Background reading	0.005			
Total absorbance	0.584			
Total absorbance - background	0.579			
Instrument Concentration	0.7180			
Sample weight (mg/kg)	0.00252			
Final Volume (L)	0.1			
Percent solids	0.667			
Dilution Factor	1			
AECOM Calculated MS Result (mg/Kg)	42.7	OK	Reported Result (mg/Kg)	42.7

%R = Found/True*100	**GP7390-S1**	**P. 19,64**	**JC49444-2R**	
True Value (mg/kg)	59.5			
Native concentration (mg/Kg)	1.8			
AECOM%R	68.8	OK	Reported %R	68.8

Percent Solids	**JC49444-2R**	**P. 24**	**135-Y42A-SW-E-7.7-8.2**	
Empty dish weight=	29.07			
Wet weight=	34.63			
Dry weight=	32.78			
AECOM %solids =	66.7	OK	Reported %solids=	66.7

Reporting Limit	**JC49444-2R**	**P. 7,64**	**135-Y42A-SW-E-7.7-8.2**	
Low Standard	0.01			
Initial weight (mg/kg)	0.0025			
Final volume (L)	0.1			
Percent solids	0.667			
Dilution Factor	1			
Reporting Limit	0.60	OK	Reported RL (mg/Kg)=	0.60

Sample Calculations	**JC49444-2R**	**P. 7,64**	**135-Y42A-SW-E-7.7-8.2**	
Background reading	0.053			
Total absorbance	0.077			
Total absorbance - background	0.024			
Instrument Response	0.030			
Sample weight (mg/kg)	0.0025			
Final Volume (L)	0.1			
Percent solids	0.667			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	1.8	OK	Reported Result (mg/Kg)	1.8

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Data Validation Report

Project:	Al Smith Building Post Remediation Sampling	
Laboratory:	SGS/Accutest, Dayton, NJ	
Laboratory Job No.:	JC53724 and JC53724R	
Analysis/Method:	Hexavalent Chromium SW846 3060A/7196A	
Validation Level:	Full	
Site Location/Address:	70 Carteret Avenue, Jersey City, NJ	
AECOM Project No:	60540263.GA.RA.COS.2017.ASM	
Prepared by:	Sharon McKechnie /AECOM	Completed on: 10/30/2017
Reviewed by:	Mary Kozik/AECOM	File Name: JC53724_R_ 2017-10-30_DVR-F

Introduction

The data were reviewed in accordance with the FSP-QAPP and the following NJDEP validation Standard Operating Procedure(s) (SOP):

- NJDEP Office of Data Quality SOP 5.A.10, Rev 3 (September 2009), SOP for Analytical Data Validation of Hexavalent Chromium - for USEPA SW-846 Method 3060A, USEPA SW-846 Method 7196A.

The results of quality control data analyzed with site samples were used to assess the overall reliability of the data. The following qualifiers were used to identify data quality issues:

U: Indicates the analyte was not detected in the sample above the sample reporting limit.

J: Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

J+: Indicates the analyte was positively identified; the associated numerical value is an estimated quantity with a potential high bias.

J-: Indicates the analyte was positively identified; the associated numerical value is an estimated quantity with a potential low bias.

UJ: Indicates the analyte was not detected above the reporting limit and the reporting limit was approximate.

UB: The analyte concentration is less than or equal to three (3) times the concentration in the associated method/prep blank. The presence of the analyte in the sample is negated (UB) due to laboratory contamination.

JB: The analyte concentration is greater than three (3) times, but less than or equal to ten (10) times the concentration in the associated method/prep blank. The presence of that analyte in the sample is considered "real". The concentration is quantitatively qualified (JB) due to method blank contamination.

R: The sample result was rejected due to serious deficiencies; the presence or absence of the analyte could not be confirmed.

RA: The sample result was rejected but is still considered usable.

Sample Information

The samples listed below were collected by AECOM on October 23, 2017 as part of the PPG - Al Smith Building Post Remediation sampling at 70 Carteret Avenue, Jersey City, New Jersey. Only the samples and parameter listed below were validated.

Field ID	Laboratory ID	Matrix	Fraction
ASM-FB20171023 (Equipment Blank)	JC53724-1	Aqueous	Hexavalent Chromium
ASM-X45A-PB-12.3-12.8	JC53724-2,2R	Soil	Hexavalent Chromium
ASM-X45A-SW-E-10.3-10.8	JC53724-14,14R	Soil	Hexavalent Chromium
ASM-X45A-SW-E-6.3-6.8	JC53724-12,12R	Soil	Hexavalent Chromium
ASM-X45A-SW-E-6.3-6.8X (Field Duplicate of ASM-X45A-SW-E-6.3-6.8)	JC53724-15,15R	Soil	Hexavalent Chromium
ASM-X45A-SW-E-8.3-8.8	JC53724-13,13R	Soil	Hexavalent Chromium
ASM-X45A-SW-N-10.3-10.8	JC53724-5,5R	Soil	Hexavalent Chromium
ASM-X45A-SW-N-6.3-6.8	JC53724-3,3R	Soil	Hexavalent Chromium
ASM-X45A-SW-N-8.3-8.8	JC53724-4,4R	Soil	Hexavalent Chromium
ASM-X45A-SW-S-10.3-10.8	JC53724-11,11R	Soil	Hexavalent Chromium
ASM-X45A-SW-S-6.3-6.8	JC53724-9,9R	Soil	Hexavalent Chromium
ASM-X45A-SW-S-8.3-8.8	JC53724-10,10R	Soil	Hexavalent Chromium
ASM-X45A-SW-W-10.3-10.8	JC53724-8,8R	Soil	Hexavalent Chromium
ASM-X45A-SW-W-6.3-6.8	JC53724-6,6R	Soil	Hexavalent Chromium
ASM-X45A-SW-W-8.3-8.8	JC53724-7,7R	Soil	Hexavalent Chromium

The samples were collected following the procedures detailed in the Work Order for PPG - Al Smith Building Post Remediation sampling at 70 Carteret Avenue, Jersey City, New Jersey and the Field Sampling Plan/Quality Assurance Project Plan for Non-Residential and Residential Chromium Sites Hudson County, New Jersey (December 2011).

General Comments

The data package was complete. Quality control (QC) issues identified during validation are discussed below. Refer to the Soil Target Analyte Summary Hit List(s) in Attachment A for a listing of all detected results, qualified results, and associated qualifications, where applicable. The nonconformances for each section discussed below are presented in Attachment B.

MS Results

Sample ASM-X45A-PB-12.3-12.8 (JC53724-2) was selected for the soil matrix spike (MS) analysis and used for supporting data quality recommendations. The soluble and insoluble MS recoveries from the initial batch were 3.8% and 77.0%, respectively. The soluble MS recovery did not meet the quality control (QC) criteria of 75-125%R, and was less than 50%. The PDS recovery was 34.0%, which did not meet the PDS criteria of 85-115%. After pH adjustment the PDS %R was 48.9%.

Based on the low soluble MS and PDS recoveries, the MS and associated samples were reanalyzed using Method 7196. The soluble and insoluble MS recoveries from the reanalysis batch were 3.9% and 79.3%, respectively. The soluble MS recovery did not meet the QC criteria of 75-125%R, and was less than 50%. The PDS recovery was 42.3%, which did not meet the PDS criteria of 85-115%. After pH adjustment the PDS %R was 50.6%.

Since the MS and initial PDS recoveries were outside the acceptable QC limits, additional parameters were analyzed to determine if possible matrix interferences could be the cause for the low matrix spike recovery. All the soil samples were tested for pH and oxidation reduction potential (ORP) and plotted on an Eh/pH phase diagram. From this diagram, the source sample for the matrix spike analysis was plotted below the phase change line, indicating a reducing potential within the sample matrix incapable of supporting hexavalent chromium. Analyses for ferrous iron, sulfide screen, and total organic carbon (TOC) were performed on the MS source sample to confirm the oxidizing/reducing potential within the sample matrix. The sulfide screen was reported as nondetect, indicating no reducing agents within the sample matrix; however, the ferrous iron (2.8%) and the TOC results (88,500 mg/Kg) were positive, indicating potential reducing agents within the sample matrix.

Since the soluble MS and PDS recoveries from both the initial and reanalysis did not meet the MS QC requirements, but both insoluble MS recoveries met the MS QC requirements, all hexavalent chromium results were qualified as estimated (J-/UJ) and are considered to be biased low. The highest detected result between the initial and reanalysis was reported for each sample.

Field Duplicate Precision

ASM-X45A-SW-E-6.3-6.8 (JC53724-12R)/ASM-X45A-SW-E-6.3-6.8X (JC53724-15) was the field duplicate (FD) pair associated with the samples in this data set. The FD precision did not meet the QC criteria; therefore, all soil samples were qualified as estimated (J/UJ).

Sample Results

Reported results (flagged B by the laboratory) that were less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL) are approximate values and have been qualified as estimated (J).

Percent Solids

The moisture content for sample ASM-X45A-PB-12.3-12.8 (JC53724-2) exceeded the acceptable limit of 50%; therefore, the results were qualified (J/UJ) as estimated.

Data Quality and Usability

Based on the low soluble MS recoveries from the initial and reanalysis, the hexavalent chromium results in all soil samples were qualified as estimated (J-/UJ) with a cumulative non-directional bias (J/UJ) since qualification for FD precision was also applied. The MS sample matrix appears to be reducing based on the Eh-pH diagram; TOC and ferrous iron are present. The highest

detected result between the initial and reanalysis was reported for all soil samples. Qualified results are presented in Attachments A and B.

Additional issues:

All soil samples were qualified for field duplicate precision

Sample results reported between the MDL and RL, and or qualified due to high percent moisture content are usable as estimated values with an unknown directional bias.

ATTACHMENTS

Attachment A: Target Analyte Summary Hit List(s)

Attachment B: Data Validation Report Form

Attachment A

Target Analyte Summary Hit List(s)

Soil Target Analyte Summary Hit List (Hexavalent Chromium)

Site Name Al Smith Building Post Remediation Sampling
Sampling Date October 23, 2017
Lab Name/ID SGS/Accutest, Dayton, NJ
SDG No JC53724 and JC53724R
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID ASM-FB20171023

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
ASM-X45A-PB-12.3-12.8	JC53724-2	CHROMIUM (HEXAVALENT)	U	U	UJ	0.85	Qualify	1,2,3,5
ASM-X45A-SW-E-10.3-10.8	JC53724-14	CHROMIUM (HEXAVALENT)	U	1.6	1.6J	0.50	Qualify	1,2,3
ASM-X45A-SW-E-6.3-6.8X	JC53724-15	CHROMIUM (HEXAVALENT)	U	2.3	2.3J	0.45	Qualify	1,2,3
ASM-X45A-SW-E-8.3-8.8	JC53724-13	CHROMIUM (HEXAVALENT)	U	3.2	3.2J	0.55	Qualify	1,2,3
ASM-X45A-SW-S-10.3-10.8	JC53724-11	CHROMIUM (HEXAVALENT)	U	1.3	1.3J	0.55	Qualify	1,2,3
ASM-X45A-SW-S-8.3-8.8	JC53724-10	CHROMIUM (HEXAVALENT)	U	23.9	23.9J	0.49	Qualify	1,2,3
ASM-X45A-SW-W-6.3-6.8	JC53724-6	CHROMIUM (HEXAVALENT)	U	1.1	1.1J	0.44	Qualify	1,2,3
ASM-X45A-SW-W-8.3-8.8	JC53724-7	CHROMIUM (HEXAVALENT)	U	1.1	1.1J	0.50	Qualify	1,2,3
ASM-X45A-SW-E-6.3-6.8	JC53724-12R	CHROMIUM (HEXAVALENT)	U	0.76	0.76J	0.50	Qualify	1,2,3
ASM-X45A-SW-N-10.3-10.8	JC53724-5R	CHROMIUM (HEXAVALENT)	U	0.52B	0.52J	0.53	Qualify	1,2,3,4
ASM-X45A-SW-N-6.3-6.8	JC53724-3R	CHROMIUM (HEXAVALENT)	U	2.2	2.2J	0.46	Qualify	1,2,3
ASM-X45A-SW-N-8.3-8.8	JC53724-4R	CHROMIUM (HEXAVALENT)	U	1.2	1.2J	0.49	Qualify	1,2,3
ASM-X45A-SW-S-6.3-6.8	JC53724-9R	CHROMIUM (HEXAVALENT)	U	2.3	2.3J	0.45	Qualify	1,2,3
ASM-X45A-SW-W-10.3-10.8	JC53724-8R	CHROMIUM (HEXAVALENT)	U	4.1	4.1J	0.54	Qualify	1,2,3

Note: A “U” under Method Blank column indicates a nondetect result.

NJDEP Laboratory Footnote

1. The result was estimated because the insoluble MS recoveries were greater than 75%, but the soluble MS recoveries were less than 50%.
2. The result was estimated because the field duplicate did not meet the precision QC criteria.
3. The reported value was qualified because the PDS recovery was less than 85 percent.
4. The reported result was greater than the MDL but less than the RL and qualified as estimated.
5. The reported value was qualified because the sample moisture content exceeded 50 percent.

Attachment B

Data Validation Report Form

Client Name: PPG Industries	**Project Number:** 60540263.GA.RA.COS.2017.ASM
Site Location: Al Smith Building Post Remediation Sampling, Jersey City, NJ	**Project Manager:** Lindi Higgins
Laboratory: SGS/Accutest, Dayton, NJ	**Type of Validation:** Full
Laboratory Job No: JC53724 and JC53724R	**Date Checked:** 10/30/2017
Validator: Sharon McKechnie	**Peer:** Mary Kozik

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X			
Field I.D. included?	X			
Laboratory I.D. included?	X			
Did data package sample IDs match sample IDs on COC?	X			
Did electronic data deliverable (EDD) sample IDs match COC sample IDs?	X			
Did data package sample IDs match electronic data deliverable (EDD) sample IDs?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6 ºC?	X			
Signed COCs included?	X			
Date of sample collection included?	X			
Date of sample digestion included?	X			
Holding time to digestion met criteria? (Soils -30 days from collection to digestion.)	X			
Date of analysis included?	X			
Holding time to analysis met criteria? (Soils -168 hours from digestion to analysis; Aqueous - 24 hours from collection to analysis.	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			
Definitions: MDL - Method Detection Limit; %R - Percent Recovery; RL - Reporting Limit; RPD - Relative Percent Difference; RSD - Relative Standard Deviation :Corr - Correlation Coefficient.				

ITEM	YES	NO	N/A	COMMENTS
Initial calibration documentation included in lab package?	X			
1) Blank plus 4 standards (7196A) or blank plus 3 standards (7199)	X			
2) Correlation coefficient of =0.995 (7196A) or =0.999 (7199)	X			
3) Calibrate daily or each time instrument is set up.	X			
Calibration Check Standard (CCS) for 7196A and Quality Control Sample (QCS) for 7199 Included in Lab Package?	X			
1) %R criteria met? (90 - 110%)	X			
2) Correct frequency of one per every 10 samples	X			
3) CCS and QCS from independent source and at mid-level of calibration curve	X			
Calibration Blanks	X			
1) Analyzed prior to initial calibration standards and after each CCS/QCS?	X			
2) Absolute value should not exceed MDL.	X			
Method Blank, Field Blanks and/or Equipment Blanks Included in Lab Package?	X			
1) Method blank analyzed with each preparation batch?	X			
2) Absolute value should not exceed MDL.	X			
Eh and pH Data	X			
1) Eh and pH data was included and plotted for all samples?	X			
Soluble Matrix Spike Data Included in Lab Package?	X			JC53724-2 and 2R
1) Soluble Matrix %R criteria met? (75-125%R).		X		See table
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?		X		JC53724-2 and 2R initial and rerun MS spiked at 84.9 mg/kg and 87.7 mg/kg, respectively. No impact on data.
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			

ITEM	YES	NO	N/A	COMMENTS
Insoluble Matrix Spike Data Included in Lab Package?	X			JC53724-2 and 2R
1) Insoluble Matrix %R criteria met? (75-125%R).	X			See table
2) Was the spike concentration around 400 to 800 mg/Kg?		X		JC53724-2 and 2R initial and rerun MS spiked at 1690 mg/kg and 2280 mg/kg, respectively. No impact on data.
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Post Digestion Spike	X			JC53724-2 and 2R
1) Post Digestion Spike %R criteria met? (85-115%R).		X		See table
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?	X			
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Sample Duplicate Data Included in Lab Package?	X			JC53724-2 and 2R
1) RPD criteria met? (RPD < 20%) if both results are ≥4x RL or control limit of± RL if both results are <4xRL.	X			Initial and rerun sample and lab dups all nondetect; no table
2) Was a sample duplicate analyzed at the frequency of 1 per batch or 20 samples?	X			
Was a Laboratory Control Sample (LCS) Included in Lab Package?	X			
1) %R criteria met? (80-120%R).	X			
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples?	X			
Were any Field Duplicate samples submitted with this SDG?	X			JC53724-12R/ JC53724-15
1) RPD criteria met? (RPD < 20%) if both results are ≥4x RL or control limit of± RL if both results are <4xRL.		X		See Table
Were all sample quantitation and reporting requirements met?	X			
1) Were all solid samples reported with percent solids > 50%?		X		See Table
2) Were any samples analyzed or reported with dilutions?		X		
1) For soils by 7196A, was the pH within a range of 7.0-8.0?	X			

ITEM	YES	NO	N/A	COMMENTS
2) For soils by 7199, was the pH within a range of 9.0-9.5?			X	
3) For aqueous by 7196A, was the pH with a range of 1.5-2.5?	X			
4) For soils (3060A), was the digestion temperature 90-95C for at least 60 minutes?	X			
5) For 7199, was each sample injected twice and was the RPD ≤20?			X	
Total chromium concentration greater than hexavalent chromium concentration for each sample where applicable?	X			Chromium reported in SDG JC53724A

Matrix Spikes

Sample ID	Lab ID	Analyte	Matrix Spike	% Recovery	Lower Limit	Upper Limit	PDS %/pH Adj PDS%	PDS Limit
ASM-X45A-PB-12.3-12.8	JC53724-2	CHROMIUM (HEXAVALENT)	Soluble	3.8	75	125	34.0/48.9	85-115
ASM-X45A-PB-12.3-12.8		CHROMIUM (HEXAVALENT)	Insoluble	77.0				
ASM-X45A-PB-12.3-12.8	JC53724-2R	CHROMIUM (HEXAVALENT)	Soluble	3.9			42.3/50.6	
ASM-X45A-PB-12.3-12.8		CHROMIUM (HEXAVALENT)	Insoluble	79.3				

Field Duplicates

Sample ID	Duplicate ID	Analyte	Sample Result	Duplicate Result	QL	Units	RPD %	Actions
ASM-X45A-SW-E-6.3-6.8	ASM-X45A-SW-E-6.3-6.8X	CHROMIUM (HEXAVALENT)	0.76	2.3	0.50	mg/kg	100	**One result >4XRL, One result <4XRL; Estimate J/UJ all soil samples**

Percent Solids

Sample ID	Percent Solids (%)	Status
ASM-X45A-PB-12.3-12.8	47.1	<50%

SDG#: JC53724/ Method 7196
Batch: GN71496
Cr+6 ICAL 10/24/17
Soil
(p. 63 of data pkg)

x - concentration	y - response
0	0
0.01	0.009
0.05	0.042
0.1	0.078
0.3	0.233
0.5	0.391
0.8	0.612
1	0.797

				(p. 63 of data pkg)
AECOM Calculated Offset	-0.0004	OK	Reported Offset	-0.0004
AECOM Slope	0.7844	OK	Reported Slope	0.7844
AECOM Calculated r	0.99968	OK	Reported r	0.99968

LCS calculation	**GP8720-B1**	**P. 41,63**		
Background Absorbance	0			
Total absorbance	0.724			
Total absorbance - background	0.724			
Instrument Concentration	0.923			
Sample weight (mg/kg)	0.0025			
Final Volume (L)	0.1			
Dilution Factor	1			
AECOM Calculated LCS Result (mg/Kg)	36.9	OK	Reported Result (mg/Kg)	36.9

%R = Found/True*100	**GP8720-B1**	**P. 41,63**		
True Value (mg/kg)	40			
AECOM Calculated %R	92.3	OK	Reported %R	92.3

MS calculation	**GP8720-S1**	**P. 43,63**	**ASM-X45A-PB-12.3-12.8**	
Background reading	0.017			
Total absorbance	0.046			
Total absorbance - background	0.029			
Instrument Concentration	0.0374			
Sample weight (mg/kg)	0.0025			
Final Volume (L)	0.1			
Percent solids	0.471			
Dilution Factor	1			
AECOM Calculated MS Result (mg/Kg)	3.2	OK	Reported Result (mg/Kg)	3.2

%R = Found/True*100	**GP8720-S1**	**P. 43,63**	**ASM-X45A-PB-12.3-12.8**	
True Value (mg/kg)	84.9			
Native concentration (mg/Kg)	0			
AECOM%R	3.7	OK, rounding	Reported %R	3.8

Percent Solids	**ASM-X45A-PB-12.3-12.8**	**P. 44**	**JC53724-2**	
Empty dish weight=	23.97			
Wet weight=	31.85			
Dry weight=	27.68			
AECOM %solids =	47.1	OK	Reported %solids=	47.1

Reporting Limit	**ASM-X45A-PB-12.3-12.8**	**P. 11,63**	**JC53724-2**	
Low Standard	0.01			
Initial weight (mg/kg)	0.0025			
Final volume (L)	0.1			
Percent solids	0.471			
Dilution Factor	1			
Reporting Limit	0.85	OK	Reported RL (mg/Kg)=	0.85

Sample Calculations	**ASM-X45A-PB-12.3-12.8**	**P. 11,63**	**JC53724-2**	
Background reading	0.019			
Total absorbance	0.023			
Total absorbance - background	0.004			
Instrument Response	0.006			
Sample weight (mg/kg)	0.00252			
Final Volume (L)	0.1			
Percent solids	0.471			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.47	OK, Reported as Nondetect	Reported Result (mg/Kg)	0.81 U

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Data Validation Report

Project:	Al Smith Building Post Remediation Sampling	
Laboratory:	SGS/Accutest, Dayton, NJ	
Laboratory Job No.:	JC53724A	
Analysis/Method:	TAL Metals SW-846 3050B/6010C	
Validation Level:	Limited	
Site Location/Address:	70 Carteret Avenue, Jersey City, NJ	
AECOM Project No:	60540263.GA.RA.COS.2017.ASM	
Prepared by:	Sharon McKechnie /AECOM	Completed on: 10/12/2017
Reviewed by:	Mary Kozik/AECOM	File Name: JC53724A _2017-10-30_DVR-F

Introduction

The data were reviewed in accordance with the FSP-QAPP and the following NJDEP validation Standard Operating Procedure(s) (SOP):

- NJDEP Office of Data Quality SOP 5.A.16, Rev 1 (May 2002), Quality Assurance Data Validation of Analytical Deliverables for Inorganics (based on USEPA SW-846 Methods).

The results of quality control data analyzed with site samples were used to assess the overall reliability of the data. The following qualifiers were used to identify data quality issues:

U: Indicates the analyte was not detected in the sample above the sample reporting limit.

J: Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

J+: Indicates the analyte was positively identified; the associated numerical value is an estimated quantity with a potential high bias.

J-: Indicates the analyte was positively identified; the associated numerical value is an estimated quantity with a potential low bias.

UJ: Indicates the analyte was not detected above the reporting limit and the reporting limit was approximate.

UB: The analyte concentration is less than or equal to three (3) times the concentration in the associated method/prep blank. The presence of the analyte in the sample is negated (UB) due to laboratory contamination.

JB: The analyte concentration is greater than three (3) times, but less than or equal to ten (10) times the concentration in the associated method/prep blank. The presence of that analyte in

the sample is considered "real". The concentration is quantitatively qualified (JB) due to method blank contamination.

R: The sample result was rejected due to serious deficiencies; the presence or absence of the analyte could not be confirmed.

RA: The sample result was rejected but is still considered usable.

Sample Information

The samples listed below were collected by AECOM on October 23, 2017 as part of the PPG - Al Smith Building Post Remediation sampling at 70 Carteret Avenue, Jersey City, New Jersey. Only the samples and parameters listed below were validated.

Field ID	Laboratory ID	Matrix	Fraction*
ASM-FB20171023 (Equipment Blank)	JC53724-1A	Aqueous	Metals
ASM-X45A-PB-12.3-12.8	JC53724-2A	Soil	Metals
ASM-X45A-SW-E-10.3-10.8	JC53724-14A	Soil	Metals
ASM-X45A-SW-E-6.3-6.8	JC53724-12A	Soil	Metals
ASM-X45A-SW-E-6.3-6.8X (Field Duplicate of ASM-X45A-SW-E-6.3-6.8)	JC53724-15A	Soil	Metals
ASM-X45A-SW-E-8.3-8.8	JC53724-13A	Soil	Metals
ASM-X45A-SW-N-10.3-10.8	JC53724-5A	Soil	Metals
ASM-X45A-SW-N-6.3-6.8	JC53724-3A	Soil	Metals
ASM-X45A-SW-N-8.3-8.8	JC53724-4A	Soil	Metals
ASM-X45A-SW-S-10.3-10.8	JC53724-11A	Soil	Metals
ASM-X45A-SW-S-6.3-6.8	JC53724-9A	Soil	Metals
ASM-X45A-SW-S-8.3-8.8	JC53724-10A	Soil	Metals
ASM-X45A-SW-W-10.3-10.8	JC53724-8A	Soil	Metals
ASM-X45A-SW-W-6.3-6.8	JC53724-6A	Soil	Metals
ASM-X45A-SW-W-8.3-8.8	JC53724-7A	Soil	Metals
*Cr, Ni, Sb, Tl, V			

The samples were collected following the procedures detailed in the Work Order for PPG - Al Smith Building Post Remediation sampling at 70 Carteret Avenue, Jersey City, New Jersey and the Field Sampling Plan/Quality Assurance Project Plan for Non-Residential and Residential Chromium Sites Hudson County, New Jersey (December 2011).

General Comments

The data package was complete. Quality control (QC) issues identified during validation are discussed below. Refer to the Soil Target Analyte Summary Hit List(s) in Attachment A for a listing of all detected results, qualified results, and associated qualifications, where applicable. The nonconformances for each section discussed below are presented in Attachment B.

TAL Metals

Blanks

Chromium was detected at a concentration greater than the method detection limit (MDL) but less than the reporting limit (RL) in the method blank (MB) associated with the soil samples in this SDG. All associated results for chromium were greater than ten times the MB; therefore, no action was taken.

Matrix Spike Results

Sample ASM-X45A-PB-12.3-12.8 (JC53724-2A) was used for the matrix spike/matrix spike duplicate (MS/MSD) analysis associated with the samples in this SDG. The MS recovery was below the QC criteria for antimony; therefore all antimony results were qualified as estimated (J/UJ) with no defined bias because the MSD recovery met QC criteria.

Field Duplicate Results

Samples ASM-X45A-SW-E-6.3-6.8 (JC53724-12A) and ASM-X45A-SW-E-6.3-6.8X (JC53724-15A) were the sample and field duplicate (FD) pair associated with the samples in this data set.

The precision for chromium in the FD pair did not meet the QC criteria. Therefore, all soil sample chromium results were qualified as estimated (J).

Sample Results

Reported results (flagged B by the laboratory) that were less than the RL, but greater than or equal to the MDL, are approximate values and have been qualified as estimated (J).

Percent Solids

The moisture content for sample ASM-X45A-PB-12.3-12.8 (JC53724-2A) exceeded the acceptable limit of 50%; therefore, the results were qualified (J/UJ) as estimated.

Data Quality and Usability

In general, these data appear to be valid and may be used for decision-making purposes, no data were rejected. Qualified and detected results are presented in Attachments A and B.

- All soil chromium results were qualified as estimated for field duplicate precision.
- All soil antimony results were qualified as estimated for matrix spike nonconformance.
- Sample results reported between the MDL and RL or qualified for low percent solids, were estimated with an unknown directional bias.

ATTACHMENTS

Attachment A: Target Analyte Summary Hit List(s)

Attachment B: Data Validation Report Form

Attachment A

Target Analyte Summary Hit List(s)

Soil Target Analyte Summary Hit List (TAL Metals)

Site Name Al Smith Building Post Remediation Sampling
Sampling Date October 23, 2017
Lab Name/ID SGS/Accutest, Dayton, NJ
SDG No JC53724A
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID ASM-FB20171023

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
ASM-X45A-SW-S-8.3-8.8	JC53724-10A	ANTIMONY	U	1.2B	1.2J	2.4	Qualify	1,2
ASM-X45A-SW-S-10.3-10.8	JC53724-11A	ANTIMONY	U	15.8	15.8J	2.7	Qualify	2
ASM-X45A-SW-E-6.3-6.8	JC53724-12A	ANTIMONY	U	0.98B	0.98J	2.4	Qualify	1,2
ASM-X45A-SW-E-8.3-8.8	JC53724-13A	ANTIMONY	U	1.6B	1.6J	2.6	Qualify	1,2
ASM-X45A-SW-E-10.3-10.8	JC53724-14A	ANTIMONY	U	U	UJ	2.4	Qualify	2
ASM-X45A-SW-E-6.3-6.8X	JC53724-15A	ANTIMONY	U	U	UJ	2.3	Qualify	2
ASM-X45A-PB-12.3-12.8	JC53724-2A	ANTIMONY	U	U	UJ	4.4	Qualify	2,4
ASM-X45A-SW-N-6.3-6.8	JC53724-3A	ANTIMONY	U	5.8	5.8J	4.7	Qualify	2
ASM-X45A-SW-N-8.3-8.8	JC53724-4A	ANTIMONY	U	0.73B	0.73J	2.4	Qualify	1,2
ASM-X45A-SW-N-10.3-10.8	JC53724-5A	ANTIMONY	U	U	UJ	2.7	Qualify	2
ASM-X45A-SW-W-6.3-6.8	JC53724-6A	ANTIMONY	U	U	UJ	2.1	Qualify	2
ASM-X45A-SW-W-8.3-8.8	JC53724-7A	ANTIMONY	U	0.75B	0.75J	2.6	Qualify	1,2
ASM-X45A-SW-W-10.3-10.8	JC53724-8A	ANTIMONY	U	U	UJ	2.7	Qualify	2
ASM-X45A-SW-S-6.3-6.8	JC53724-9A	ANTIMONY	U	U	UJ	2.3	Qualify	2
ASM-X45A-SW-S-8.3-8.8	JC53724-10A	CHROMIUM	U	750	750J	1.2	Qualify	3

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
ASM-X45A-SW-S-10.3-10.8	JC53724-11A	CHROMIUM	U	314	314J	1.4	Qualify	3
ASM-X45A-SW-E-6.3-6.8	JC53724-12A	CHROMIUM	U	21.9	21.9J	1.2	Qualify	3
ASM-X45A-SW-E-8.3-8.8	JC53724-13A	CHROMIUM	U	38.1	38.1J	1.3	Qualify	3
ASM-X45A-SW-E-10.3-10.8	JC53724-14A	CHROMIUM	U	17.8	17.8J	1.2	Qualify	3
ASM-X45A-SW-E-6.3-6.8X	JC53724-15A	CHROMIUM	U	38.9	38.9J	1.2	Qualify	3
ASM-X45A-PB-12.3-12.8	JC53724-2A	CHROMIUM	U	207	207J	2.2	Qualify	3,4
ASM-X45A-SW-N-6.3-6.8	JC53724-3A	CHROMIUM	U	181	181J	1.2	Qualify	3
ASM-X45A-SW-N-8.3-8.8	JC53724-4A	CHROMIUM	U	191	191J	1.2	Qualify	3
ASM-X45A-SW-N-10.3-10.8	JC53724-5A	CHROMIUM	U	209	209J	1.3	Qualify	3
ASM-X45A-SW-W-6.3-6.8	JC53724-6A	CHROMIUM	U	13.9	13.9J	1.1	Qualify	3
ASM-X45A-SW-W-8.3-8.8	JC53724-7A	CHROMIUM	U	959	959J	1.3	Qualify	3
ASM-X45A-SW-W-10.3-10.8	JC53724-8A	CHROMIUM	U	1190	1190J	1.3	Qualify	3
ASM-X45A-SW-S-6.3-6.8	JC53724-9A	CHROMIUM	U	72.1	72.1J	1.1	Qualify	3
ASM-X45A-SW-S-8.3-8.8	JC53724-10A	NICKEL	U	36.0	36.0	4.8		
ASM-X45A-SW-S-10.3-10.8	JC53724-11A	NICKEL	U	29.6	29.6	5.5		
ASM-X45A-SW-E-6.3-6.8	JC53724-12A	NICKEL	U	22.5	22.5	4.8		
ASM-X45A-SW-E-8.3-8.8	JC53724-13A	NICKEL	U	20.7	20.7	5.2		
ASM-X45A-SW-E-10.3-10.8	JC53724-14A	NICKEL	U	12.5	12.5	4.7		
ASM-X45A-SW-E-6.3-6.8X	JC53724-15A	NICKEL	U	18.3	18.3	4.7		
ASM-X45A-PB-12.3-12.8	JC53724-2A	NICKEL	U	34.8	34.8J	8.8	Qualify	4
ASM-X45A-SW-N-6.3-6.8	JC53724-3A	NICKEL	U	29.3	29.3	4.7		
ASM-X45A-SW-N-8.3-8.8	JC53724-4A	NICKEL	U	27.6	27.6	4.8		
ASM-X45A-SW-N-10.3-10.8	JC53724-5A	NICKEL	U	25.2	25.2	5.3		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
ASM-X45A-SW-W-6.3-6.8	JC53724-6A	NICKEL	U	18.3	18.3	4.3		
ASM-X45A-SW-W-8.3-8.8	JC53724-7A	NICKEL	U	37.0	37.0	5.2		
ASM-X45A-SW-W-10.3-10.8	JC53724-8A	NICKEL	U	42.5	42.5	5.3		
ASM-X45A-SW-S-6.3-6.8	JC53724-9A	NICKEL	U	22.0	22.0	4.6		
ASM-X45A-PB-12.3-12.8	JC53724-2A	THALLIUM	U	U	UJ	2.2	Qualify	4
ASM-X45A-SW-S-8.3-8.8	JC53724-10A	VANADIUM	U	33.8	33.8	6.0		
ASM-X45A-SW-S-10.3-10.8	JC53724-11A	VANADIUM	U	29.9	29.9	6.9		
ASM-X45A-SW-E-6.3-6.8	JC53724-12A	VANADIUM	U	27.0	27.0	6.0		
ASM-X45A-SW-E-8.3-8.8	JC53724-13A	VANADIUM	U	34.7	34.7	6.6		
ASM-X45A-SW-E-10.3-10.8	JC53724-14A	VANADIUM	U	30.2	30.2	5.9		
ASM-X45A-SW-E-6.3-6.8X	JC53724-15A	VANADIUM	U	28.5	28.5	5.8		
ASM-X45A-PB-12.3-12.8	JC53724-2A	VANADIUM	U	45.0	45.0J	11	Qualify	4
ASM-X45A-SW-N-6.3-6.8	JC53724-3A	VANADIUM	U	28.6	28.6	5.8		
ASM-X45A-SW-N-8.3-8.8	JC53724-4A	VANADIUM	U	26.3	26.3	6.0		
ASM-X45A-SW-N-10.3-10.8	JC53724-5A	VANADIUM	U	29.1	29.1	6.6		
ASM-X45A-SW-W-6.3-6.8	JC53724-6A	VANADIUM	U	18.4	18.4	5.4		
ASM-X45A-SW-W-8.3-8.8	JC53724-7A	VANADIUM	U	32.2	32.2	6.5		
ASM-X45A-SW-W-10.3-10.8	JC53724-8A	VANADIUM	U	34.3	34.3	6.7		
ASM-X45A-SW-S-6.3-6.8	JC53724-9A	VANADIUM	U	32.2	32.2	5.7		

Note: A “U” under Method Blank column indicates a nondetect result.

NJDEP Laboratory Footnote

1. The reported result was greater than the MDL but less than the RL and qualified as estimated.
2. The result was qualified for MS nonconformance.
3. The result was qualified for field duplicate precision.
4. The result was qualified for low percent solids.

Attachment B

Data Validation Report Form

Client Name: PPG Industries	**Project Number:** 60540263.GA.RA.COS.2017.ASM
Site Location: PPG - Al Smith Building Post Remediation Sampling Jersey City, NJ	**Project Manager:** Lindi Higgins
Laboratory: SGS/Accutest, Dayton, NJ	**Type of Validation:** Limited
Laboratory Job No: JC53724A	**Date Checked:** 10/30/2017
Validator: Sharon McKechnie	**Peer:** Mary Kozik

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X			
Field I.D. included?	X			
Laboratory I.D. included?	X			
Did data package sample IDs match sample IDs on COC?	X			
Did electronic data deliverable (EDD) sample IDs match COC sample IDs?	X			
Did data package sample IDs match electronic data deliverable (EDD) sample IDs?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6ºC?	X			
Signed COCs included?	X			
Date of sample collection included?	X			
Date of sample digestion included?	X			
Date of analysis included?	X			
Holding time met QC criteria? (Metals -180 days from sample collection; Mercury - 28 days from sample collection. If HT exceeded by 10 days R all results.	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			
Definitions: MDL - Method Detection Limit; %R - Percent Recovery; RL - Reporting Limit; RPD - Relative Percent Difference; RSD - Relative Standard Deviation :Corr - Correlation Coefficient.				

ITEM	YES	NO	N/A	COMMENTS
Sample dilutions?	X			Up to 2X
Initial calibration documentation included in lab package?			X	N/A for Limited Validation
1) Calibrate daily or each time instrument is set up.			X	
2) ICP (6010) -Blank plus 1 standard?			X	
3) Hg (7470/7471) -Blank plus 5 standards			X	
Initial Calibration Verification Standard (ICV) for ICP (6010) and Initial Calibration Check Standard (ICCS) for Hg (7470/7471) included in lab package?			X	N/A for Limited Validation
1) Analyzed immediately after initial calibration? If no, reject (R) data.			X	
2) %R criteria met? (90-110%).			X	
3) Spot check ICV/ICCS results for several analytes.			X	
Continuing Calibration Verification Standard (CCV) for ICP (6010) and Calibration Check Standard (CCS) for Hg (7470/7471) included in Lab Package?			X	N/A for Limited Validation
1) Analyzed immediately after each ICV/ICC/CB and after every 10 samples?			X	
2) CCS and CCV from independent source and at mid- level of calibration curve.			X	
3) %R criteria met? (90-110%R).			X	
4) Spot check CCV/CCS results for several analytes.			X	
Low Calibration Standard (CRI) included in Lab Package?			X	N/A for Limited Validation
1) %R criteria met? -			X	
Calibration Blanks			X	N/A for Limited Validation
1) Analyzed after daily calibration and after each ICV/ICC/CCV/CCS and after every 10 samples?			X	
2) Absolute value <3xIDL?			X	
Method Blank Included in Lab Package?	X			
1) Method blank analyzed with each preparation batch or every SDG, or 1/20 samples?	X			
2) Method blank analyzed 1/20 samples?	X			
3) MB results nondetect?		X		But all assoc >10X MB, no quals. See Table
4) Negative MB result reported?		X		

ITEM	YES	NO	N/A	COMMENTS
Field Blanks/Equipment Blanks Included in Lab Package?	X			
1) FB/EB result non-detect?	X			
ICP Interference Check Sample (ICS) included in Lab Package?			X	N/A for Limited Validation
1) Analyzed at beginning of analytical run?			X	
2) %R criteria met? (80-120			X	
3) Spot check accuracy of %Rs			X	
Matrix Spike/Matrix Spike Duplicate Data Included in Lab Package?	X			JC53724-2A
1) MS/MSD %R (75-125%R) and RPD (+20%) criteria met?		X		See Table
2) Was a sample spiked at the frequency of 1/batch or 20 samples?	X			
3) Was the MS performed on a site sample?	X			
4) Was the MS performed on a FB/EB or TB?		X		
Post Digestion Spike			X	
1) %R criteria met? (75-125%R) - %R>125			X	
2) Was the spike performed on a FB/EB or TB?			X	
3) Was a sample spiked at the frequency of 1/batch or 20 samples?			X	
Laboratory Duplicate Data Included in Lab Package?		X		
Aqueous - If RPD is >20%?			X	
Soil - If RPD is >35%?			X	
Was a Laboratory Control Sample (LCS) Included in Lab Package?	X			
1) LCS %R criteria met? (80-120%R).	X			
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples?	X			
Serial Dilution			X	N/A for Limited Validation
1) %D (<10%R) criteria met? -			X	
2) Was the frequency 1/batch or 20 samples?			X	
3) Was a site sample used?			X	
4) Was a FB/EB or TB used?			X	

ITEM	YES	NO	N/A	COMMENTS
5) Spot check accuracy of %Ds.			X	
Field Duplicate Data included in Lab Package?	X			JC53724-12A/15A
Aqueous - If RPD is >20%?			X	
Soil - If RPD is >35%?		X		See Table
Percent Solids data included in Lab Package?	X			
1) %Solids criteria (Reg 2 criteria) met? (>/=50%)		X		See Table
Total Chromium concentration >hexavalent chromium in associated samples?	X			Hexavalent chromium reported in SDGs JC53724_R

Blanks

Analyte	Result	3X	10X	Actions	Associated Samples
Soil Method Blank	**(mg/kg)**	**(mg/kg)**	**(mg/kg)**		
Chromium	0.28	0.84	2.8	None, all >10X MB	All Soil Samples

Matrix Spikes

Sample ID	Lab ID	Analyte	MS % R	MSD % R	Lower Limit	Upper Limit	RPD (%)	RPD Limit (%)	Action
ASM-X45A-PB-12.3-12.8	JC53724-2A	Antimony	**70.5**	75.4	75	125	2.5	20	**J/UJ**

Field Duplicate

Sample	Analyte	Result	RL	Duplicate	Result	RL	Units	RPD	RPD Limit	RPD Status
ASM-X45A-SW-E-6.3-6.8	ANTIMONY	0.98 B	2.4	ASM-X45A-SW-E-6.3-6.8X	2.3 U	2.3	mg/kg	NC	35	RPD NC; Detected Result <RL; Accept
ASM-X45A-SW-E-6.3-6.8	CHROMIUM	21.9	1.2	ASM-X45A-SW-E-6.3-6.8X	38.9	1.2	mg/kg	55.9	35	**Estimate J/UJ**

Percent Solids

Sample ID	Percent Solids (%)	Status
ASM-X45A-PB-12.3-12.8	47.1	<50%

AECOM
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Data Validation Report

Project:	Al Smith Building Post Remediation Sampling	
Laboratory:	SGS/Accutest, Dayton, NJ	
Laboratory Job No.:	JC55516	
Analysis/Method:	Hexavalent Chromium SW846 3060A/7196A	
Validation Level:	Full	
Site Location/Address:	70 Carteret Avenue, Jersey City, NJ	
AECOM Project No:	60540263.GA.RA.COS.2017.ASM	
Prepared by:	Charlene Livingston Flint /AECOM	Completed on: 11/27/2017
Reviewed by:	Mary Kozik/AECOM	File Name: JC55516_2017-11-27_DVReport-F

Introduction

The data were reviewed in accordance with the FSP-QAPP and the following NJDEP validation Standard Operating Procedure (SOP):

- NJDEP Office of Data Quality SOP 5.A.10, Rev 3 (September 2009), SOP for Analytical Data Validation of Hexavalent Chromium - for USEPA SW-846 Method 3060A, USEPA SW-846 Method 7196A.

The results of quality control data analyzed with site samples were used to assess the overall reliability of the data. The following qualifiers were used to identify data quality issues:

U: Indicates the analyte was not detected in the sample above the sample reporting limit.

J: Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

J+: Indicates the analyte was positively identified; the associated numerical value is an estimated quantity with a potential high bias.

J-: Indicates the analyte was positively identified; the associated numerical value is an estimated quantity with a potential low bias.

UJ: Indicates the analyte was not detected above the reporting limit and the reporting limit was approximate.

UB: The analyte concentration is less than or equal to three (3) times the concentration in the associated method/prep blank. The presence of the analyte in the sample is negated (UB) due to laboratory contamination.

JB: The analyte concentration is greater than three (3) times, but less than or equal to ten (10) times the concentration in the associated method/prep blank. The presence of that analyte in

the sample is considered "real". The concentration is quantitatively qualified (JB) due to method blank contamination.

R: The sample result was rejected due to serious deficiencies; the presence or absence of the analyte could not be confirmed.

RA: The sample result was rejected but is still considered usable.

Sample Information

The samples listed below were collected by AECOM on November 15, 2017 as part of the Al Smith Building Post Remediation Sampling at 70 Carteret Avenue, Jersey City, New Jersey. Only the samples and parameters listed below were validated.

Field ID	Laboratory ID	Matrix	Fraction
ASM-FB20171115 (Equipment Blank)	JC55516-1	Aqueous	Hexavalent Chromium
ASM-S48A-SW-S-2.4-2.9	JC55516-16	Soil	Hexavalent Chromium
ASM-S48A-SW-S-4.4-4.9	JC55516-15	Soil	Hexavalent Chromium
ASM-S48A-SW-S-6.4-6.9	JC55516-14	Soil	Hexavalent Chromium
ASM-S48A-SW-W-2.4-2.9	JC55516-13	Soil	Hexavalent Chromium
ASM-S48A-SW-W-4.4-4.9	JC55516-12	Soil	Hexavalent Chromium
ASM-S48A-SW-W-6.4-6.9	JC55516-11	Soil	Hexavalent Chromium
ASM-V44A-SW-N-5.1-5.6	JC55516-3	Soil	Hexavalent Chromium
ASM-V44A-SW-N-7.1-7.6	JC55516-2	Soil	Hexavalent Chromium
ASM-V45A-SW-S-7.2-7.7	JC55516-4	Soil	Hexavalent Chromium
ASM-W44A-SW-E-4.9-5.4	JC55516-8	Soil	Hexavalent Chromium
ASM-W44A-SW-E-6.9-7.4	JC55516-7	Soil	Hexavalent Chromium
ASM-W44A-SW-N-4.9-5.4	JC55516-6	Soil	Hexavalent Chromium
ASM-W44A-SW-N-6.9-7.4	JC55516-5	Soil	Hexavalent Chromium
ASM-W45A-SW-E-7.2-7.7	JC55516-10	Soil	Hexavalent Chromium
ASM-W45A-SW-S-7.0-7.5	JC55516-9	Soil	Hexavalent Chromium

The samples were collected following the procedures detailed in the Work Order for PPG - Al Smith Building Post Remediation sampling at 70 Carteret Avenue, Jersey City, New Jersey and the Field Sampling Plan/Quality Assurance Project Plan for Non-Residential and Residential Chromium Sites Hudson County, New Jersey (December 2011).

General Comments

The data package was complete. Quality control (QC) issues identified during validation are discussed below. Refer to the Target Analyte Summary Hit List(s) in Attachment A for a listing of all detected results, qualified results, and associated qualifications, where applicable. The nonconformances for each section discussed below are presented in Attachment B.

MS Results

Sample ASM-S48A-SW-S-2.4-2.9 (JC55516-2) was selected for the matrix spike (MS) analysis associated with the samples in this SDG and was used for supporting data quality

recommendations. The soluble and insoluble MS recoveries were 77.3% and 90.6%, respectively; which met the quality control criteria of 75-125%. The post digestion spike (PDS) recovery was 89.8%, which met the PDS criteria of 85-115%. No data qualification was required on the basis of spike recoveries.

Data Quality and Usability

In general, these data appear to be valid and may be used for decision-making purposes. No data were rejected. Qualified results, if applicable, are presented in Attachments A and B.

ATTACHMENTS

Attachment A: Target Analyte Summary Hit List(s)

Attachment B: Data Validation Report Form

Attachment A

Target Analyte Summary Hit List(s)

Soil Target Analyte Summary Hit List (Hexavalent Chromium)

Site Name Al Smith Building Post Remediation Sampling
Sampling Date November 15, 2017
Lab Name/ID SGS/Accutest, Dayton, NJ
SDG No JC55516
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID ASM-FB20171115

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
ASM-S48A-SW-S-2.4-2.9	JC55516-16	CHROMIUM (HEXAVALENT)	U	6.6	6.6	0.50		
ASM-S48A-SW-S-4.4-4.9	JC55516-15	CHROMIUM (HEXAVALENT)	U	2.5	2.5	0.52		
ASM-S48A-SW-W-2.4-2.9	JC55516-13	CHROMIUM (HEXAVALENT)	U	1.0	1.0	0.51		
ASM-S48A-SW-W-4.4-4.9	JC55516-12	CHROMIUM (HEXAVALENT)	U	0.65	0.65	0.51		
ASM-S48A-SW-W-6.4-6.9	JC55516-11	CHROMIUM (HEXAVALENT)	U	1.4	1.4	0.77		
ASM-V44A-SW-N-5.1-5.6	JC55516-3	CHROMIUM (HEXAVALENT)	U	3.4	3.4	0.46		
ASM-V44A-SW-N-7.1-7.6	JC55516-2	CHROMIUM (HEXAVALENT)	U	0.83	0.83	0.46		
ASM-V45A-SW-S-7.2-7.7	JC55516-4	CHROMIUM (HEXAVALENT)	U	4.9	4.9	0.50		
ASM-W44A-SW-E-4.9-5.4	JC55516-8	CHROMIUM (HEXAVALENT)	U	0.54	0.54	0.45		
ASM-W44A-SW-E-6.9-7.4	JC55516-7	CHROMIUM (HEXAVALENT)	U	2.9	2.9	0.51		
ASM-W44A-SW-N-4.9-5.4	JC55516-6	CHROMIUM (HEXAVALENT)	U	0.94	0.94	0.48		
ASM-W44A-SW-N-6.9-7.4	JC55516-5	CHROMIUM (HEXAVALENT)	U	26.5	26.5	0.51		
ASM-W45A-SW-E-7.2-7.7	JC55516-10	CHROMIUM (HEXAVALENT)	U	0.79	0.79	0.47		
ASM-W45A-SW-S-7.0-7.5	JC55516-9	CHROMIUM (HEXAVALENT)	U	0.61	0.61	0.48		

Note: A “U” under Method Blank column indicates a nondetect result.

Attachment B

Data Validation Report Form

Client Name: PPG Industries	**Project Number:** 60540263.GA.RA.COS.2017.ASM
Site Location: Al Smith Building Post Remediation Sampling ,Jersey City, NJ	**Project Manager:** Lindi Higgins
Laboratory: SGS/Accutest, Dayton, NJ	**Type of Validation:** Full
Laboratory Job No: JC55516	**Date Checked:** 11/27/2017
Validator: Charlene Livingston Flint	**Peer:** Mary Kozik

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X			
Field I.D. included?	X			
Laboratory I.D. included?	X			
Did data package sample IDs match sample IDs on COC?	X			
Did electronic data deliverable (EDD) sample IDs match COC sample IDs?	X			
Did data package sample IDs match electronic data deliverable (EDD) sample IDs?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6 ºC?	X			2.1 ºC
Signed COCs included?	X			
Date of sample collection included?	X			
Date of sample digestion included?	X			
Holding time to digestion met criteria? (Soils -30 days from collection to digestion.)	X			
Date of analysis included?	X			
Holding time to analysis met criteria? (Soils -168 hours from digestion to analysis; Aqueous - 24 hours from collection to analysis.	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			
Definitions: MDL - Method Detection Limit; %R - Percent Recovery; RL - Reporting Limit; RPD - Relative Percent Difference; RSD - Relative Standard Deviation :Corr - Correlation Coefficient.				

ITEM	YES	NO	N/A	COMMENTS
Initial calibration documentation included in lab package?	X			
1) Blank plus 4 standards (7196A) or blank plus 3 standards (7199)	X			
2) Correlation coefficient of =0.995 (7196A) or =0.999 (7199)	X			
3) Calibrate daily or each time instrument is set up.	X			
Calibration Check Standard (CCS) for 7196A and Quality Control Sample (QCS) for 7199 Included in Lab Package?	X			
1) %R criteria met? (90 - 110%)	X			
2) Correct frequency of one per every 10 samples	X			
3) CCS and QCS from independent source and at mid- level of calibration curve	X			
Calibration Blanks	X			
1) Analyzed prior to initial calibration standards and after each CCS/QCS?	X			
2) Absolute value should not exceed MDL.	X			
Method Blank, Field Blanks and/or Equipment Blanks Included in Lab Package?	X			
1) Method blank analyzed with each preparation batch?	X			
2) Absolute value should not exceed MDL.	X			
Eh and pH Data	X			
1) Eh and pH data was included and plotted for all samples?	X			
Soluble Matrix Spike Data Included in Lab Package?	X			ASM-S48A-SW-S-2.4-2.9 (JC55516-2)
1) Soluble Matrix %R criteria met? (75-125%R).	X			
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?	X			Spiked at 45 mg/kg.
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Insoluble Matrix Spike Data Included in Lab Package?	X			
1) Insoluble Matrix %R criteria met? (75-125%R).	X			
2) Was the spike concentration around 400 to 800 mg/Kg?		X		Spiked at 1330 mg/kg. No impact on data.
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			

ITEM	YES	NO	N/A	COMMENTS
Post Digestion Spike	X			
1) Post Digestion Spike %R criteria met? (85-115%R).	X			
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?	X			
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Sample Duplicate Data Included in Lab Package?	X			JC55516-2
1) RPD criteria met? (RPD < 20%) if both results are ≥4x RL or control limit of± RL if both results are <4xRL.	X			
2) Was a sample duplicate analyzed at the frequency of 1 per batch or 20 samples?	X			
Was a Laboratory Control Sample (LCS) Included in Lab Package?	X			
1) %R criteria met? (80-120%R).	X			
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples?	X			
Were any Field Duplicate samples submitted with this SDG?		X		
1) RPD criteria met? (RPD < 20%) if both results are ≥4x RL or control limit of± RL if both results are <4xRL.			X	
Were all sample quantitation and reporting requirements met?	X			
1) Were all solid samples reported with percent solids > 50%?	X			
2) Were any samples analyzed or reported with dilutions?		X		
Miscellaneous Items	X			
1) For soils by 7196A, was the pH within a range of 7.0-8.0?	X			
2) For soils by 7199, was the pH within a range of 9.0-9.5?			X	
3) For aqueous by 7196A, was the pH with a range of 1.5-2.5?	X			
4) For soils (3060A), was the digestion temperature 90-95C for at least 60 minutes?	X			
5) For 7199, was each sample injected twice and was the RPD ≤20?			X	

Matrix Spikes

Sample ID	Lab ID	Analyte	Matrix Spike	% Recovery	Lower Limit	Upper Limit	PDS	PDS Limit	Action
ASM-V44A-SW-N-7.1-7.6	JC55516-2	CHROMIUM (HEXAVALENT)	Insoluble	90.6	75	125	89.8	85-115	Accept
ASM-V44A-SW-N-7.1-7.6	JC55516-2	CHROMIUM (HEXAVALENT)	Soluble	77.3	75	125			

Lab Duplicates

Sample ID	Lab ID	Analyte	Sample Result	Qual	Duplicate Result	Qual	QL	Units	RPD	Action
ASM-V44A-SW-N-7.1-7.6	JC55516-2	CHROMIUM (HEXAVALENT)	0.83		0.97		0.46	mg/kg	15.6	Accept

Percent Solids

Sample ID	Percent Solids (%)	Status
ASM-S48A-SW-S-2.4-2.9	79.7	ok @50%
ASM-S48A-SW-S-4.4-4.9	76.5	ok @50%
ASM-S48A-SW-S-6.4-6.9	61.9	ok @50%
ASM-S48A-SW-W-2.4-2.9	78.6	ok @50%
ASM-S48A-SW-W-4.4-4.9	78.5	ok @50%
ASM-S48A-SW-W-6.4-6.9	52.2	ok @50%
ASM-V44A-SW-N-5.1-5.6	87.9	ok @50%
ASM-V44A-SW-N-7.1-7.6	86.8	ok @50%

Sample ID	Percent Solids (%)	Status
ASM-V45A-SW-S-7.2-7.7	79.4	ok @50%
ASM-W44A-SW-E-4.9-5.4	89.6	ok @50%
ASM-W44A-SW-E-6.9-7.4	77.7	ok @50%
ASM-W44A-SW-N-4.9-5.4	83.3	ok @50%
ASM-W44A-SW-N-6.9-7.4	78.3	ok @50%
ASM-W45A-SW-E-7.2-7.7	84.3	ok @50%
ASM-W45A-SW-S-7.0-7.5	83.5	ok @50%

SDG#: JC55516/ Method 7196
Batch: GN72725
Cr+6 ICAL 11/16/17
Soil
(p. 63 of data pkg)

x - concentration	y - response
0	0
0.01	0.009
0.05	0.041
0.1	0.083
0.3	0.245
0.5	0.403
0.8	0.663
1	0.813

				(p. 63 of data pkg)
AECOM Calculated Offset	0.0002	OK	Reported Offset	0.0002
AECOM Slope	0.8172	OK	Reported Slope	0.8172
AECOM Calculated r	0.99990	OK	Reported r	0.99990

LCS calculation	**GP9353-B1**	**P. 41,63**		
Background Absorbance	0			
Total absorbance	0.761			
Total absorbance - background	0.761			
Instrument Concentration	0.931			
Sample weight (mg/kg)	0.0025			
Final Volume (L)	0.1			
Dilution Factor	1			
AECOM Calculated LCS Result (mg/Kg)	37.2	OK	Reported Result (mg/kg)	37.2

%R = Found/True*100	**GP9353-B1**	**P. 41,63**		
True Value (mg/kg)	40			
AECOM Calculated %R	93.1	OK, rounding	Reported %R	93.0

MS calculation	**GP9353-S1**	**P. 43,44,63**	**JC55516-2**	
Background reading	0.01			
Total absorbance	0.656			
Total absorbance - background	0.646			
Instrument Concentration	0.7903			
Sample weight (mg/kg)	0.00256			
Final Volume (L)	0.1			
Percent solids	0.868			
Dilution Factor	1			
AECOM Calculated MS Result (mg/Kg)	35.6	OK	Reported Result (mg/kg)	35.6

%R = Found/True*100	**GP9353-S1**	**P. 43,44,63**	**JC55516-2**	
True Value (mg/kg)	45			
Native concentration (mg/Kg)	0.83			
AECOM%R	77.2	OK, rounding	Reported %R	77.3

Percent Solids	**JC55516-2**	**P. 44**	**ASM-V44A-SW-N-7.1-7.6**	
Empty dish weight=	26.5			
Wet weight=	32.02			
Dry weight=	31.29			
AECOM %solids =	86.8	OK	Reported %solids=	86.8

Reporting Limit	**JC55516-2**	**P. 12,44,63**	**ASM-V44A-SW-N-7.1-7.6**	
Low Standard	0.01			
Initial weight (mg/kg)	0.00251			
Final volume (L)	0.1			
Percent solids	0.868			
Dilution Factor	1			
Reporting Limit	0.46	OK	Reported RL (mg/kg)=	0.46

Sample Calculations	**JC55516-2**	**P. 12,44,63**	**ASM-V44A-SW-N-7.1-7.6**	
Background reading	0.017			
Total absorbance	0.032			
Total absorbance - background	0.015			
Instrument Response	0.018			
Sample weight (mg/kg)	0.00251			
Final Volume (L)	0.1			
Percent solids	0.868			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.83	OK	Reported Result (mg/kg)	0.83

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Data Validation Report

Project:	Al Smith Building Post Remediation Sampling	
Laboratory:	SGS/Accutest, Dayton, NJ	
Laboratory Job No.:	JC56973	
Analysis/Method:	Metals by ICP-AES/ SW846-6010C	
Validation Level:	Limited	
Site Location/Address:	70 Carteret Avenue, Jersey City, NJ	
AECOM Project No:	60540263.GA.RA.COS.2017.ASM	
Prepared by:	Charlene Livingston Flint /AECOM	Completed on: 05/14/2018
Reviewed by:	Sharon McKechnie /AECOM	File Name: JC56973_2018-05-14_DVReport-F

Introduction

The data were reviewed in accordance with the FSP-QAPP and the following NJDEP and / or Region 2 validation Standard Operating Procedure(s) (SOP):

- NJDEP Office of Data Quality SOP 5.A.16, Rev 1 (May 2002), Quality Assurance Data Validation of Analytical Deliverables for Inorganics (based on USEPA SW-846 Methods);

The results of quality control data analyzed with site samples were used to assess the overall reliability of the data. The following qualifiers were used to identify data quality issues:

U: Indicates the analyte was not detected in the sample above the sample reporting limit.

J: Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

J+: Indicates the analyte was positively identified; the associated numerical value is an estimated quantity with a potential high bias.

J-: Indicates the analyte was positively identified; the associated numerical value is an estimated quantity with a potential low bias.

UJ: Indicates the analyte was not detected above the reporting limit and the reporting limit was approximate.

UB: The analyte concentration is less than or equal to three (3) times the concentration in the associated method/prep blank. The presence of the analyte in the sample is negated (UB) due to laboratory contamination.

JB: The analyte concentration is greater than three (3) times, but less than or equal to ten (10) times the concentration in the associated method/prep blank. The presence of that

analyte in the sample is considered "real". The concentration is quantitatively qualified (JB) due to method blank contamination.

R: The sample result was rejected due to serious deficiencies; the presence or absence of the analyte could not be confirmed.

RA: The sample result was rejected due to NJ specific data validation QC requirements; however, the result is usable for project objectives. Refer to the Data Quality and Usability section in this data validation report for further discussion.

Sample Information

The samples listed below were collected by AECOM on December 8, 2017 as part of the Al Smith Building Post Remediation Sampling at 70 Carteret Avenue, Jersey City, New Jersey. Only the samples and parameter listed below were validated:

Field ID	Laboratory ID	Matrix	Fraction
ASM-FB20171208 (Equipment Blank)	JC56973-1	Aqueous	Metals (Sb)
ASM-W49A-SW-E-5.5-6.0	JC56973-3	Soil	Metals (Sb)
ASM-W49A-SW-E-5.5-6.0X (Field Duplicate of ASM-W49A-SW-E-5.5-6.0)	JC56973-4	Soil	Metals (Sb)
ASM-W49A-SW-N-5.5-6.0	JC56973-2	Soil	Metals (Sb)
ASM-W49A-SW-W-5.5-6.0	JC56973-5	Soil	Metals (Sb)

The samples were collected following the procedures detailed in the Work Order for PPG- Al Smith Building Post Remediation Sampling at 70 Carteret Avenue, Jersey City, NJ and the Field Sampling Plan/Quality Assurance Project Plan for Non-Residential and Residential Chromium Sites Hudson County, New Jersey (December 2011).

General Comments

The data package was complete. Quality control (QC) issues identified during validation are discussed below. Refer to the Soil Target Analyte Summary Hit List(s) in Attachment A for a listing of all detected results, qualified results, and associated qualifications, where applicable. The nonconformances for each section discussed below are presented in Attachment B.

Antimony

MS/MSD Results

The laboratory selected sample ASM-W49A-SW-W-5.5-6.0 as the source for the matrix spike (MS/MSD) analysis. The MS/MSD recoveries for antimony were below the QC requirements and were qualified as estimated (J-/UJ) with the potential for low bias in all soil samples.

Qualified sample results for MS/MSD recoveries that did not meet the QC requirements are presented in the Metals Soil Target Analyte Summary Hit List in Attachment A and in the nonconformance table in Attachment B.

Sample Results

Reported results (flagged B by the laboratory) that were less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL) are approximate values and have been qualified as estimated (J).

Data Quality and Usability

In general, these data appear to be valid and may be used for decision-making purposes. No data were rejected. Qualified and detected results are discussed in attachments A and B below.

Sample results qualified due to low MS recoveries are usable as estimated values with the potential for low bias.

Sample results reported between the MDL and RL are usable as estimated values.

ATTACHMENTS

Attachment A: Target Analyte Summary Hit Lists(s)

Attachment B: Data Validation Report Form

Attachment A

Target Analyte Summary Hit List(s)

Soil Target Analyte Summary Hit List (Antimony)

Site Name Al Smith Building Post Remediation Sampling
Sampling Date December 8, 2017
Lab Name/ID SGS/Accutest, Dayton, NJ
SDG No JC56973
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID ASM-FB20171208

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
ASM-W49A-SW-N-5.5-6.0	JC56973-2	ANTIMONY	U	16.9	16.9 J-	2.3	Qualify	1
ASM-W49A-SW-E-5.5-6.0	JC56973-3	ANTIMONY	U	2.3B	2.3 J-	2.7	Qualify	1
ASM-W49A-SW-E-5.5-6.0X	JC56973-4	ANTIMONY	U	2.6	2.6 J-	2.6	Qualify	1
ASM-W49A-SW-W-5.5-6.0	JC56973-5	ANTIMONY	U	U	UJ	2.5	Qualify	1

Note: A “U” under Method Blank column indicates a nondetect result.
A “U” under the Laboratory Sample Result and Validation Sample Result columns indicates a nondetect result at the RL.

NJDEP Laboratory Footnotes

1. The reported or nondetected value was qualified because the MS/MSD spike recovery was less than 75 percent.

Attachment B

Data Validation Report Form

Client Name: PPG Industries	**Project Number:** 60540263.GA.RA.COS.2017.ASM
Site Location: Al Smith Building Post Remediation Sampling, Jersey City, NJ	**Project Manager:** Lindi Higgins
Laboratory: SGS/Accutest, Dayton, NJ	**Type of Validation:** Limited
Laboratory Job No: JC56973	**Date Checked:** 5/14/2018
Validator: Charlene Livingston Flint	**Peer:** Sharon McKechnie

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X			
Field I.D. included?	X			
Laboratory I.D. included?	X			
Did data package sample IDs match sample IDs on COC?	X			
Did electronic data deliverable (EDD) sample IDs match COC sample IDs?	X			
Did data package sample IDs match electronic data deliverable (EDD) sample IDs?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6 ºC?	X			4.0 ºC
Signed COCs included?	X			
Date of sample collection included?	X			
Date of sample digestion included?	X			
Date of analysis included?	X			
Holding time met QC criteria? (Metals -180 days from sample collection; Mercury - 28 days from sample collection. If HT exceeded by 10 days R all results.	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			
Definitions: MDL - Method Detection Limit; %R - Percent Recovery; RL - Reporting Limit; RPD - Relative Percent Difference; RSD - Relative Standard Deviation :Corr - Correlation Coefficient.				

ITEM	YES	NO	N/A	COMMENTS
Sample dilutions?		X		
Initial calibration documentation included in lab package?			X	N/A for Limited Validation
1) Calibrate daily or each time instrument is set up.			X	
2) ICP (6010) -Blank plus 1 standard?			X	
3) Hg (7470/7471) -Blank plus 5 standards?			X	
Initial Calibration Verification Standard (ICV) for ICP (6010) and Initial Calibration Check Standard (ICCS) for Hg (7470/7471) included in lab package?			X	
1) Analyzed immediately after initial calibration?			X	
2) %R criteria met? (90-110%).			X	
3) Spot check ICV/ICCS results for several analytes.			X	
Continuing Calibration Verification Standard (CCV) for ICP (6010) and Calibration Check Standard (CCS) for Hg (7470/7471) included in Lab Package?			X	N/A for Limited Validation
1) Analyzed immediately after each ICV/ICC/CB and after every 10 samples?			X	
2) CCS and CCV from independent source and at mid- level of calibration curve.			X	
3) %R criteria met? (90-110%R).			X	
4) Spot check CCV/CCS results for several analytes.			X	
Low Calibration Standard (CRI) included in Lab Package?			X	
1) %R criteria met?			X	
Calibration Blanks			X	N/A for Limited Validation
1) Analyzed after daily calibration and after each ICV/ICC/CCV/CCS and after every 10 samples?			X	
2) Absolute value <3xIDL?			X	
Method Blank Field Blanks/Equipment Blanks Included in Lab Package?	X			
1) Method blank analyzed with each preparation batch or every SDG, or 1/20 samples?	X			
2) Method blank analyzed 1/20 samples?	X			
3) MB results nondetect?	X			
4) Negative MB result reported?		X		

ITEM	YES	NO	N/A	COMMENTS
ICP Interference Check Sample (ICS) included in Lab Package?			X	N/A for Limited Validation
1) Analyzed at beginning of analytical run?			X	
2) %R criteria met? (80-120%)			X	
3) Spot check accuracy of %Rs			X	
Matrix Spike/Matrix Spike Duplicate Data Included in Lab Package?	X			
1) MS/MSD %R (75-125%R) and RPD (≤20%) criteria met?		X		See table
2) Was a sample spiked at the frequency of 1/batch or 20 samples?	X			
3) Was the MS performed on a site sample?	X			ASM-W49A-SW-W-5.5-6.0 (JC56973-5)
4) Was the MS performed on a FB/EB or TB?		X		
Post Digestion Spike		X		
1) %R criteria met? (75-125%R)			X	
2) Was the spike performed on a FB/EB or TB?			X	
3) Was a sample spiked at the frequency of 1/batch or 20 samples?			X	
Laboratory Duplicate Data Included in Lab Package?			X	
Aqueous - If RPD is >20%?			X	
Soil - If RPD is >35%?			X	
Was a Laboratory Control Sample (LCS) Included in Lab Package?	X			
1) LCS %R criteria met? (80-120%R).	X			
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples?	X			
Serial Dilution			X	N/A for Limited Validation
1) %D (<10%R) criteria met? -			X	
2) Was the frequency 1/batch or 20 samples?			X	
3) Was a site sample used?			X	
4) Was a FB/EB or TB used?			X	
5) Spot check accuracy of %Ds.			X	

ITEM	YES	NO	N/A	COMMENTS
Field Duplicate Data included in Lab Package?	X			ASM-W49A-SW-E-5.5-6.0 and ASM-W49A-SW-E-5.5-6.0X (JC56973-3 & -4)
Aqueous - If RPD is >20%?			X	
Soil - If RPD is >35%?	X			RPD 12.2%
Percent Solids data included in Lab Package?	X			
1) %Solids criteria (Reg 2 criteria) met? (>/=50%)	X			

Matrix Spikes

Sample ID	Analyte	% MS Recovery	% MSD Recovery	Lower Limit	Upper Limit	RPD	RPD Limit	Action
ASM-W49A-SW-W-5.5-6.0	ANTIMONY	63.8	66.6	75	125	4.2	20	All soil samples

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Data Validation Report

Project:	Al Smith Building Post Remediation Sampling	
Laboratory:	SGS/Accutest, Dayton, NJ	
Laboratory Job No.:	JC57751 and JC57751R	
Analysis/Method:	Hexavalent Chromium SW846 3060A/7196A/7199	
Validation Level:	Full	
Site Location/Address:	70 Carteret Avenue, Jersey City, NJ	
AECOM Project No:	60540263.GA.RA.COS.2017.ASM	
Prepared by:	Charlene Livingston Flint /AECOM	Completed on: 01/02/2018
Reviewed by:	Mary Kozik/AECOM	File Name: JC57751_R_2018-01-02_DVReport-F

Introduction

The data were reviewed in accordance with the FSP-QAPP and the following NJDEP validation Standard Operating Procedure (SOP):

- NJDEP Office of Data Quality SOP 5.A.10, Rev 3 (September 2009), SOP for Analytical Data Validation of Hexavalent Chromium - for USEPA SW-846 Method 3060A, USEPA SW-846 Method 7196A and USEPA SW-846 Method 7199;

The results of quality control data analyzed with site samples were used to assess the overall reliability of the data. The following qualifiers were used to identify data quality issues:

U: Indicates the analyte was not detected in the sample above the sample reporting limit.

J: Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

J+: Indicates the analyte was positively identified; the associated numerical value is an estimated quantity with a potential high bias.

J-: Indicates the analyte was positively identified; the associated numerical value is an estimated quantity with a potential low bias.

UJ: Indicates the analyte was not detected above the reporting limit and the reporting limit was approximate.

UB: The analyte concentration is less than or equal to three (3) times the concentration in the associated method/prep blank. The presence of the analyte in the sample is negated (UB) due to laboratory contamination.

JB: The analyte concentration is greater than three (3) times, but less than or equal to ten (10) times the concentration in the associated method/prep blank. The presence of that analyte in

the sample is considered "real". The concentration is quantitatively qualified (JB) due to method blank contamination.

R: The sample result was rejected due to serious deficiencies; the presence or absence of the analyte could not be confirmed.

RA: The sample result was rejected but is still considered usable.

Sample Information

The samples listed below were collected by AECOM on December 20, 2017 as part of the Al Smith Building Post Remediation Sampling at 70 Carteret Avenue, Jersey City, New Jersey. Only the samples and parameters listed below were validated.

Field ID	Laboratory ID	Matrix	Fraction
ASM-FB20171220 (Equipment Blank)	JC57751-1	Aqueous	Hexavalent Chromium
ASM-X43A-PB-12.1-12.6	JC57751-9, -9R	Soil	Hexavalent Chromium
ASM-X43A-PB-12.1-12.6X (Field Duplicate of ASM-X43A-PB-12.1-12.6)	JC57751-10, -10R	Soil	Hexavalent Chromium
ASM-Y43A-PB-8.0-8.5	JC57751-2, -2R	Soil	Hexavalent Chromium
ASM-Y43A-SW-E-2.0-2.5	JC57751-5, -5R	Soil	Hexavalent Chromium
ASM-Y43A-SW-E-4.0-4.5	JC57751-4, -4R	Soil	Hexavalent Chromium
ASM-Y43A-SW-E-6.0-6.5	JC57751-3, -3R	Soil	Hexavalent Chromium
ASM-Y44A-SW-E-1.7-2.2	JC57751-8, -8R	Soil	Hexavalent Chromium
ASM-Y44A-SW-E-3.7-4.2	JC57751-7, -7R	Soil	Hexavalent Chromium
ASM-Y44A-SW-E-5.7-6.2	JC57751-6, -6R	Soil	Hexavalent Chromium

The samples were collected following the procedures detailed in the Work Order for PPG - Al Smith Building Post Remediation sampling at 70 Carteret Avenue, Jersey City, NJ and the Field Sampling Plan/Quality Assurance Project Plan for Non-Residential and Residential Chromium Sites Hudson County, New Jersey (December 2011).

General Comments

The data package was complete. Quality control (QC) issues identified during validation are discussed below. Refer to the Target Analyte Summary Hit List(s) in Attachment A for a listing of all detected results, qualified results, and associated qualifications, where applicable. The nonconformances for each section discussed below are presented in Attachment B.

MS Results

Method 7196

Sample ASM-Y43A-PB-8.0-8.5 (JC57751-2) was selected for the soil matrix spike analysis and used for supporting data quality recommendations. The soluble and insoluble matrix spike (MS) recoveries from the initial batch were 0.3% and 0.0%, respectively; which did not meet quality control (QC) criteria of 75-125%R and were less than 50%. The post digestion spike (PDS) recovery was 35.9% and after pH adjustment was 24.8%, which did not meet the PDS criteria of 85-115%.

Based on the very low MS and post-digestion spike recoveries - often an indication that Method 7199 may be more successful in producing improved matrix spike recovery, samples were reanalyzed using Method 7199.

Method 7199

Sample ASM-Y43A-PB-8.0-8.5 was again selected for the MS re-analysis associated with the samples in this SDG. The soluble and insoluble MS results from the reanalysis by method 7199 were -0.4% and 9.5%, respectively, which did not meet QC criteria of 75-125% and were less than 50%. The PDS result was 99.8%, which was within the QC criteria of 85-115%.

Since the matrix spikes failed to meet QC criteria, additional parameters were analyzed to determine if possible matrix interferences could be the cause for the low matrix spike recoveries. All the samples were tested for pH and oxidation reduction potential (ORP), and plotted on an Eh/pH phase diagram. From this chart, the source sample for the matrix spike analysis of sample ASM-Y43A-PB-8.0-8.5 was plotted above the phase change line, indicating oxidizing potential with the sample matrix capable of supporting hexavalent chromium. Ferrous iron, sulfide screen, and total organic carbon (TOC) were performed on this matrix spike source sample to confirm the oxidizing/reducing potential within the sample matrix. The sulfide screen was reported as nondetect, indicating no reducing agents within the sample matrix; however, the ferrous iron (5.1 %) and the TOC results (52,600 mg/Kg) were positive, indicating potential reducing agents within the sample matrix.

Since both soluble and insoluble MS recoveries were less than 50% in the initial analysis by method 7196 and reanalysis by method 7199, the highest detected hexavalent chromium result or the nondetect hexavalent chromium result with the lowest reporting limit (RL) was reported for each sample. As a result of MS recoveries less than 50%, all the soil hexavalent chromium results were rejected (RA).

No further qualification was taken based on the low initial PDS recovery since the reanalysis PDS %R was acceptable.

Percent Solids

The moisture content for ASM-X43A-PB-12.1-12.6 (JC57751-9) exceeded the acceptable limit of 50%; therefore, the results were qualified (J) as estimated.

Data Quality and Usability

The results for hexavalent chromium in all soil samples were rejected; however, the results may be usable for project objectives as discussed below. Qualified results are presented in Attachments A and B.

Based on the initial and reanalysis MS soluble and insoluble recoveries, the hexavalent chromium results in all the soil samples in this SDG were rejected. There were conflicting results regarding the oxidizing/reducing potential of the sample matrix shown by the Eh/pH phase diagram and the additional ancillary parameters. The Eh/pH diagram indicated that the sample matrix may be oxidizing, but the high TOC result and the ferrous iron indicated that the matrix may be reducing. The highest detected hexavalent chromium result or the nondetect hexavalent chromium result with the lowest RL between the initial analysis and reanalysis was reported for each sample.

The sample result qualified due to high percent moisture content is usable as an estimated value with an unknown directional bias.

ATTACHMENTS

Attachment A: Target Analyte Summary Hit List(s)

Attachment B: Data Validation Report Form

Attachment A

Target Analyte Summary Hit List(s)

Soil Target Analyte Summary Hit List (Hexavalent Chromium)

Site Name Al Smith Building Post Remediation Sampling
Sampling Date December 20, 2017
Lab Name/ID SGS/Accutest, Dayton, NJ
SDG No JC57751 and JC57751R
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID ASM-FB20171220

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
ASM-X43A-PB-12.1-12.6	JC57751-9	CHROMIUM (HEXAVALENT)	U	1.4	RA	0.82	Reject	1,2
ASM-X43A-PB-12.1-12.6X	JC57751-10	CHROMIUM (HEXAVALENT)	U	0.72	RA	0.72	Reject	1
ASM-Y43A-PB-8.0-8.5	JC57751-2	CHROMIUM (HEXAVALENT)	U	0.80	RA	0.59	Reject	1
ASM-Y43A-SW-E-2.0-2.5	JC57751-5	CHROMIUM (HEXAVALENT)	U	2.0	RA	0.46	Reject	1
ASM-Y43A-SW-E-4.0-4.5	JC57751-4	CHROMIUM (HEXAVALENT)	U	1.3	RA	0.63	Reject	1
ASM-Y43A-SW-E-6.0-6.5	JC57751-3	CHROMIUM (HEXAVALENT)	U	0.80	RA	0.54	Reject	1
ASM-Y44A-SW-E-1.7-2.2	JC57751-8	CHROMIUM (HEXAVALENT)	U	3.1	RA	0.46	Reject	1
ASM-Y44A-SW-E-5.7-6.2	JC57751-6	CHROMIUM (HEXAVALENT)	U	1.1	RA	0.50	Reject	1
ASM-Y44A-SW-E-3.7-4.2	JC57751-7R	CHROMIUM (HEXAVALENT)	U	31.8	RA	2.0	Reject	1

Note: A “U” under Method Blank column indicates a nondetect result.
A “U” under the Laboratory Sample Result and Validation Sample Result columns indicates a nondetect result at the RL.

NJDEP Laboratory Footnote

1. The sample result was rejected because the soluble and insoluble matrix spike recoveries were less than 50%.

2. The reported value was qualified (J/UJ) because the sample moisture content exceeded 50 percent.

Attachment B

Data Validation Report Form

Client Name: PPG Industries	**Project Number:** 60540263.GA.RA.COS.2017.ASM
Site Location: Al Smith Building Post Remediation Sampling, Jersey City, NJ	**Project Manager:** Lindi Higgins
Laboratory: SGS/Accutest, Dayton, NJ	**Type of Validation:** Full
Laboratory Job No: JC57751 and JC57751R	**Date Checked:** 01/02/2018
Validator: Charlene Livingston Flint	**Peer:** Mary Kozik

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X			
Field I.D. included?	X			
Laboratory I.D. included?	X			
Did data package sample IDs match sample IDs on COC?	X			
Did electronic data deliverable (EDD) sample IDs match COC sample IDs?	X			
Did data package sample IDs match electronic data deliverable (EDD) sample IDs?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6 ºC?	X			4.1 ºC
Signed COCs included?	X			
Date of sample collection included?	X			
Date of sample digestion included?	X			
Holding time to digestion met criteria? (Soils -30 days from collection to digestion.)	X			
Date of analysis included?	X			
Holding time to analysis met criteria? (Soils -168 hours from digestion to analysis; Aqueous - 24 hours from collection to analysis.	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			
Definitions: MDL - Method Detection Limit; %R - Percent Recovery; RL - Reporting Limit; RPD - Relative Percent Difference; RSD - Relative Standard Deviation :Corr - Correlation Coefficient.				

ITEM	YES	NO	N/A	COMMENTS
Initial calibration documentation included in lab package?	X			
1) Blank plus 4 standards (7196A) or blank plus 3 standards (7199)	X			
2) Correlation coefficient of =0.995 (7196A) or =0.999 (7199)	X			
3) Calibrate daily or each time instrument is set up.	X			
Calibration Check Standard (CCS) for 7196A and Quality Control Sample (QCS) for 7199 Included in Lab Package?	X			
1) %R criteria met? (90 - 110%)	X			
2) Correct frequency of one per every 10 samples	X			
3) CCS and QCS from independent source and at mid- level of calibration curve	X			
Calibration Blanks	X			
1) Analyzed prior to initial calibration standards and after each CCS/QCS?	X			
2) Absolute value should not exceed MDL.	X			
Method Blank, Field Blanks and/or Equipment Blanks Included in Lab Package?	X			
1) Method blank analyzed with each preparation batch?	X			
2) Absolute value should not exceed MDL.	X			
Eh and pH Data	X			
1) Eh and pH data was included and plotted for all samples?	X			
Soluble Matrix Spike Data Included in Lab Package?	X			JC57751-2, -2R
1) Soluble Matrix %R criteria met? (75-125%R).		X		See table
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?		X		Spiked at 58.9 and 57.8 mg/kg. No impact on data.
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Insoluble Matrix Spike Data Included in Lab Package?	X			
1) Insoluble Matrix %R criteria met? (75-125%R).		X		
2) Was the spike concentration around 400 to 800 mg/Kg?		X		Spiked at 1240 and 1090 mg/kg. No impact on data.
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Post Digestion Spike	X			

ITEM	YES	NO	N/A	COMMENTS
1) Post Digestion Spike %R criteria met? (85-115%R).	X			Reanalysis met QC criteria.
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?	X			
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Sample Duplicate Data Included in Lab Package?	X			JC57751-2, -2R
1) RPD criteria met? (RPD < 20%) if both results are ≥4x RL or control limit of± RL if both results are <4xRL.	X			SR<4xRL, Abs Diff<RL, Accept
2) Was a sample duplicate analyzed at the frequency of 1 per batch or 20 samples?	X			
Was a Laboratory Control Sample (LCS) Included in Lab Package?	X			
1) %R criteria met? (80-120%R).	X			
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples?	X			
Were any Field Duplicate samples submitted with this SDG?	X			JC57751-2, -2R
1) RPD criteria met? (RPD < 20%) if both results are ≥4x RL or control limit of± RL if both results are <4xRL.	X			SR<4xRL, Abs Diff<RL, Accept
Were all sample quantitation and reporting requirements met?	X			
1) Were all solid samples reported with percent solids > 50%?		X		JC57751-9 <50%
2) Were any samples analyzed or reported with dilutions?	X			JC57751-7R was diluted 4X.
Miscellaneous Items	X			
1) For soils by 7196A, was the pH within a range of 7.0-8.0?	X			
2) For soils by 7199, was the pH within a range of 9.0-9.5?	X			
3) For aqueous by 7196A, was the pH with a range of 1.5-2.5?	X			
4) For soils (3060A), was the digestion temperature 90-95C for at least 60 minutes?	X			
5) For 7199, was each sample injected twice and was the RPD ≤20?		X		JC57751-10R >20%. Results reported from method 7196. No qualification made.

Matrix Spikes

Sample ID	Lab ID	Analyte	Matrix Spike	% Recovery	Lower Limit	Upper Limit	PDS	PDS Limit	Action
ASM-Y43A-PB-8.0-8.5	JC57751-2	CHROMIUM (HEXAVALENT)	Soluble	0.3	75	125	35.9, pH adjusted 24.8	85-115	Reject (RA)
ASM-Y43A-PB-8.0-8.5	JC57751-2	CHROMIUM (HEXAVALENT)	Insoluble	0.0	75	125			
ASM-Y43A-PB-8.0-8.5	JC57751-2R	CHROMIUM (HEXAVALENT)	Insoluble	9.5	75	125	99.8	85-115	Reject (RA)
ASM-Y43A-PB-8.0-8.5	JC57751-2R	CHROMIUM (HEXAVALENT)	Soluble	-0.4	75	125			

Lab Duplicates

Sample ID	Lab ID	Analyte	Sample Result	Qual	Duplicate Result	Qual	QL	Units	RPD	Action
ASM-Y43A-PB-8.0-8.5	JC57751-2	CHROMIUM (HEXAVALENT)	0.80		0.78	U	0.59	mg/kg	2.5	Ok, Accept
ASM-Y43A-PB-8.0-8.5	JC57751-2R	CHROMIUM (HEXAVALENT)	0.42	B	0.59	U	0.59	mg/kg	NC	<4xRL, Abs Diff<RL, Accept

NC- Not calculated

Field Duplicates

Sample ID	Duplicate ID	Analyte	Sample Result	Qual	Duplicate Result	Qual	QL	Units	RPD	Action
ASM-X43A-PB-12.1-12.6	ASM-X43A-PB-12.1-12.6X	CHROMIUM (HEXAVALENT)	1.4		0.72		0.82	mg/kg	64.2	<4xRL, Abs Diff<RL, Accept

Percent Solids

Sample ID	Percent Solids (%)	Status
ASM-X43A-PB-12.1-12.6	49	<50%, Estimate (J)
ASM-X43A-PB-12.1-12.6X	55.5	ok @50%
ASM-Y43A-PB-8.0-8.5	68.1	ok @50%
ASM-Y43A-SW-E-2.0-2.5	87.3	ok @50%
ASM-Y43A-SW-E-4.0-4.5	63.1	ok @50%
ASM-Y43A-SW-E-6.0-6.5	73.6	ok @50%
ASM-Y44A-SW-E-1.7-2.2	86.4	ok @50%
ASM-Y44A-SW-E-3.7-4.2	79.1	ok @50%
ASM-Y44A-SW-E-5.7-6.2	80.4	ok @50%

7199 Replicate RPDs

Sample ID	Rep 1 (ppm)	Rep 2 (ppm)	RPD%	RPD Criteria ≤20
JC57751-2R	0.064	0.070	9.0%	OK
JC57751-3R	0.019	0.02	5.1%	OK
JC57751-4R	0.062	0.072	14.9%	OK
JC57751-5R	0.205	0.207	1.0%	OK
JC57751-6R	0.184	0.181	1.6%	OK
JC57751-7R	1.375	1.407	2.3%	OK
JC57751-8R	0.172	0.178	3.4%	OK
JC57751-9R	0.019	0.016	17.1%	OK
JC57751-10R	0.018	0.023	24.4%	>20%

SDG#: JC57751/ Method 7196	x - concentration	y - response
Batch: GN74192		
Cr+6 ICAL 12/21/17	0	0
Soil	0.01	0.008
(p. 54 of data pkg)	0.05	0.038
	0.1	0.078
	0.3	0.262
	0.5	0.425
	0.8	0.676
	1	0.838

				(p. 54 of data pkg)
AECOM Calculated Offset	-0.0004	OK	Reported Offset	-0.0004
AECOM Slope	0.8435	OK	Reported Slope	0.8435
AECOM Calculated r	0.99988	OK	Reported r	0.99988

LCS calculation	**GP10098-B2**	**P. 29,54**		
Background Absorbance	0			
Total absorbance	0.351			
Total absorbance - background	0.351			
Instrument Concentration	0.417			
Sample weight (mg/kg)	0.0025			
Final Volume (L)	0.1			
Dilution Factor	50			
AECOM Calculated LCS Result (mg/Kg)	833	OK	Reported Result (mg/Kg)	833

%R = Found/True*100	**GP10098-B2**	**P. 29,54**		
True Value (mg/kg)	894.6			
AECOM Calculated %R	93.1	OK	Reported %R	93.1

MS calculation	**GP10098-S2**	**P. 31,32,54**	**JC57751-2**	
Background reading	0.021			
Total absorbance	0.031			
Total absorbance - background	0.01			
Instrument Concentration	0.0123			
Sample weight (mg/kg)	0.00246			
Final Volume (L)	0.1			
Percent solids	0.681			
Dilution Factor	1			
AECOM Calculated MS Result (mg/Kg)	0.73	OK	Reported Result (mg/Kg)	0.73

%R = Found/True*100	**GP10098-S2**	**P. 31,32,54**	**JC57751-2**	
True Value (mg/kg)	1240			
Native concentration (mg/Kg)	0.8			
AECOM%R	0.0	OK	Reported %R	0.0

Percent Solids	**JC57751-2**	**P. 32**	**ASM-Y43A-PB-8.0-8.5**	
Empty dish weight=	30.67			
Wet weight=	36.91			
Dry weight=	34.92			
AECOM %solids =	68.1	OK	Reported %solids=	68.1

Reporting Limit	**JC57751-2**	**P. 10,32,54**	**ASM-Y43A-PB-8.0-8.5**	
Low Standard	0.01			
Initial weight (mg/kg)	0.00248			
Final volume (L)	0.1			
Percent solids	0.681			
Dilution Factor	1			
Reporting Limit	0.59	OK	Reported RL (mg/Kg)=	0.59

Sample Calculations	**JC57751-2**	**P. 10,32,54**	**ASM-Y43A-PB-8.0-8.5**	
Background reading	0.043			
Total absorbance	0.054			
Total absorbance - background	0.011			
Instrument Response	0.013			
Sample weight (mg/kg)	0.00248			
Final Volume (L)	0.1			
Percent solids	0.681			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.80	OK	Reported Result (mg/Kg)	0.80

SDG: JC57751R/ Method 7199 **Batch GN74408** Cr+6 ICAL 12/27/17 Soil (p. 78 of data package)	x - concentration	y - response (area) mAU*min	
	0.00	0.0064	STDA
	0.005	0.0586	STDB
	0.05	0.4458	STDC
	0.1	0.8863	STDD
	0.5	4.4244	STDE

				(p. 78 of data package)
AECOM Calculated Offset	0.0073	OK	Reported Offset	0.0073
AECOM Slope	8.8320	OK, rounding	Reported Slope	8.8319
AECOM Calculated r	1.0000	OK	Reported r	1.0000

LCS calculation	**GP10118-B2**	**P. 27,88**		
Highest replicate response (AREA, mAU*min)	2.017			
Instrument Concentration (ug/L)	0.228			
Sample weight	0.0025			
Percent solids	1			
Dilution Factor	100			
AECOM Calculated LCS Result (mg/Kg)	910	OK	Reported Result (mg/Kg)	910

%R = Found/True*100	**GP10118-B2**	**P. 27,88**		
True Value (mg/kg)	960			
AECOM Calculated %R	94.8	OK	Reported %R	94.8

MS calculation	**GP10118-S2**	**P. 29,38,66,119**	**JC57751-2R**	
Highest replicate response (mAU*min)	1.596			
Instrument Concentration (ug/L)	0.1799			
Sample weight	0.00252			
Percent solids	0.681			
Dilution Factor	10			
AECOM Calculated MS Result (mg/Kg)	104.8	OK, rounding	Reported Result (mg/Kg)	104.0

%R = Found/True*100	**GP10118-S2**	**P. 29,38,66,119**	**JC57751-2R**	
True Value (mg/kg)	1090			
Native concentration (mg/Kg)	0.42			
%R	9.6	OK, rounding	Reported %R	9.5

Percent Solids	**JC57751-2R**	**P. 38**	**ASM-Y43A-PB-8.0-8.5**	
Empty dish weight=	30.67			
Wet weight=	36.91			
Dry weight=	34.92			
AECOM %solids =	68.1	OK	Reported %solids=	68.1

Reporting limit	**JC57751-2R**	**P. 66,93,**	**ASM-Y43A-PB-8.0-8.5**	
Low Standard	0.01			
Initial weight (g)	0.00248			
Final volume (L)	0.1			
Percent solids	0.718			
Dilution Factor	1			
Reporting Limit	0.56	OK	Reported RL (mg/Kg)=	0.55

Sample Calculations	**JC57751-2R**	**P. 66,93,**	**ASM-Y43A-PB-8.0-8.5**
Background reading from highest response	0.00001		
Instrument Response highest response	0.073		
Total response for replicate 1	0.07299		
Instrument Response (mg/L)	0.007		
Sample weight (mg)	0.00248		
Final Volume (L)	0.1		
Percent solids	0.718		
Dilution Factor	1		
AECOM Calculated Result (mg/Kg)	0.42	OK, <MDL, ND	0.15 U

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Data Validation Report

Project:	Al Smith Building Post Remediation Sampling	
Laboratory:	SGS/Accutest, Dayton, NJ	
Laboratory Job No.:	JC58072	
Analysis/Method:	Hexavalent Chromium SW846 3060A/7196A/7199	
Validation Level:	Full	
Site Location/Address:	70 Carteret Avenue, Jersey City, NJ	
AECOM Project No:	60540263.GA.RA.COS.2017.ASM	
Prepared by:	Charlene Livingston Flint /AECOM	Completed on: 01/08/2018
Reviewed by:	Mary Kozik/AECOM	File Name: JC58072_2018-01-08_DVReport-F

Introduction

The data were reviewed in accordance with the FSP-QAPP and the following NJDEP validation Standard Operating Procedure (SOP):

- NJDEP Office of Data Quality SOP 5.A.10, Rev 3 (September 2009), SOP for Analytical Data Validation of Hexavalent Chromium - for USEPA SW-846 Method 3060A, USEPA SW-846 Method 7196A and USEPA SW-846 Method 7199;

The results of quality control data analyzed with site samples were used to assess the overall reliability of the data. The following qualifiers were used to identify data quality issues:

U: Indicates the analyte was not detected in the sample above the sample reporting limit.

J: Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

J+: Indicates the analyte was positively identified; the associated numerical value is an estimated quantity with a potential high bias.

J-: Indicates the analyte was positively identified; the associated numerical value is an estimated quantity with a potential low bias.

UJ: Indicates the analyte was not detected above the reporting limit and the reporting limit was approximate.

UB: The analyte concentration is less than or equal to three (3) times the concentration in the associated method/prep blank. The presence of the analyte in the sample is negated (UB) due to laboratory contamination.

JB: The analyte concentration is greater than three (3) times, but less than or equal to ten (10) times the concentration in the associated method/prep blank. The presence of that analyte in

the sample is considered "real". The concentration is quantitatively qualified (JB) due to method blank contamination.

R: The sample result was rejected due to serious deficiencies; the presence or absence of the analyte could not be confirmed.

RA: The sample result was rejected but is still considered usable.

Sample Information

The samples listed below were collected by AECOM on December 27, 2017 as part of the Al Smith Building Post Remediation Sampling at 70 Carteret Avenue, Jersey City, New Jersey. Only the samples and parameters listed below were validated.

Field ID	Laboratory ID	Matrix	Fraction
ASM-FB20171227 (Equipment Blank)	JC58072-1	Aqueous	Hexavalent Chromium
ASM-X46A-PB-10.2-10.7	JC58072-2, -2R	Soil	Hexavalent Chromium
ASM-X46A-SW-E-6.2-6.7	JC58072-4, -4R	Soil	Hexavalent Chromium
ASM-X46A-SW-E-8.2-8.7	JC58072-3, -3R	Soil	Hexavalent Chromium
ASM-X47A-PB-5.9-6.4	JC58072-5, -5R	Soil	Hexavalent Chromium
ASM-X47A-PB-5.9-6.4X (Field Duplicate of ASM-X47A-PB-5.9-6.4)	JC58072-8, -8R	Soil	Hexavalent Chromium
ASM-X47A-SW-E-1.9-2.4	JC58072-7, -7R	Soil	Hexavalent Chromium
ASM-X47A-SW-E-3.9-4.4	JC58072-6, -6R	Soil	Hexavalent Chromium

The samples were collected following the procedures detailed in the Work Order for PPG - Al Smith Building Post Remediation sampling at 70 Carteret Avenue, Jersey City, NJ and the Field Sampling Plan/Quality Assurance Project Plan for Non-Residential and Residential Chromium Sites Hudson County, New Jersey (December 2011).

General Comments

The data package was complete. Quality control (QC) issues identified during validation are discussed below. Refer to the Target Analyte Summary Hit List(s) in Attachment A for a listing of all detected results, qualified results, and associated qualifications, where applicable. The nonconformances for each section discussed below are presented in Attachment B.

MS Results

Method 7196

Sample ASM-X46A-PB-10.2-10.7 (JC58072-2) was selected for the soil matrix spike analysis and used for supporting data quality recommendations. The soluble and insoluble matrix spike (MS) recoveries from the initial batch were 2.2% and 4.3%, respectively; which did not meet quality control (QC) criteria of 75-125%R and were less than 50%. The post digestion spike (PDS) recovery was 17.6% and after pH adjustment was 42.9%, which did not meet the PDS criteria of 85-115%.

Based on the very low MS and post-digestion spike recoveries - often an indication that Method 7199 may be more successful in producing improved matrix spike recovery, samples were reanalyzed using Method 7199.

Method 7199

Sample ASM-X46A-PB-10.2-10.7 was again selected for the MS re-analysis associated with the samples in this SDG. The soluble and insoluble MS results from the reanalysis by method 7199 were 0.3% and 2.0%, respectively, which did not meet QC criteria of 75-125% and were less than 50%. The PDS result was 100%, which was within the QC criteria of 85-115%.

Since the matrix spikes failed to meet QC criteria, additional parameters were analyzed to determine if possible matrix interferences could be the cause for the low matrix spike recoveries. All the samples were tested for pH and oxidation reduction potential (ORP), and plotted on an Eh/pH phase diagram. From this chart, the source sample for the matrix spike analysis of sample ASM-X46A-PB-10.2-10.7 was plotted below the phase change line, indicating reducing potential within the sample matrix, incapable of supporting hexavalent chromium. Ferrous iron, sulfide screen, and total organic carbon (TOC) were performed on this matrix spike source sample to confirm the oxidizing/reducing potential within the sample matrix. The sulfide screen was reported as nondetect, indicating no reducing agents within the sample matrix; however, the ferrous iron (1.0%) and the TOC results (117,000 mg/Kg) were positive, indicating potential reducing agents within the sample matrix.

Since both soluble and insoluble MS recoveries were less than 50% in the initial analysis by method 7196 and reanalysis by method 7199, the highest detected hexavalent chromium result or the nondetect hexavalent chromium result with the lowest reporting limit (RL) was reported for each sample. As a result of MS recoveries less than 50%, all the soil hexavalent chromium results were rejected (RA).

No further qualification was taken based on the low initial PDS recovery since the reanalysis PDS %R was acceptable.

Data Quality and Usability

In general, these data appear to be valid and may be used for decision-making purposes. The results for hexavalent chromium in all soil samples were rejected; however, the results may be usable for project objectives as discussed below. Qualified results, if applicable, are presented in Attachments A and B.

Based on the initial and reanalysis MS soluble and insoluble recoveries, the hexavalent chromium results in all the soil samples in this SDG were rejected. However, based on the reducing potential of the sample matrix shown by the Eh/pH phase diagram and the additional ancillary parameters, there is evidence to suggest that the matrix for this sample was reducing and not capable of supporting hexavalent chromium. Therefore, even though the sample results were rejected based on MS %Rs, these results may be usable for site decisions as estimated values. The highest detected hexavalent chromium result between the initial analysis and reanalysis was reported for each sample.

ATTACHMENTS

Attachment A: Target Analyte Summary Hit List(s)

Attachment B: Data Validation Report Form

Attachment A

Target Analyte Summary Hit List(s)

Soil Target Analyte Summary Hit List (Hexavalent Chromium)

Site Name Al Smith Building Post Remediation Sampling
Sampling Date December 27, 2017
Lab Name/ID SGS/Accutest, Dayton, NJ
SDG No JC58072
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID ASM-FB20171227

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
ASM-X46A-PB-10.2-10.7	JC58072-2	CHROMIUM (HEXAVALENT)	U	U	RA	0.59	Reject	1
ASM-X46A-SW-E-8.2-8.7	JC58072-3	CHROMIUM (HEXAVALENT)	U	162	RA	3.1	Reject	1
ASM-X47A-PB-5.9-6.4X	JC58072-8	CHROMIUM (HEXAVALENT)	U	U	RA	0.52	Reject	1
ASM-X46A-SW-E-6.2-6.7	JC58072-4R	CHROMIUM (HEXAVALENT)	U	4.6	RA	0.57	Reject	1
ASM-X47A-PB-5.9-6.4	JC58072-5R	CHROMIUM (HEXAVALENT)	U	0.83	RA	0.50	Reject	1
ASM-X47A-SW-E-1.9-2.4	JC58072-7R	CHROMIUM (HEXAVALENT)	U	0.65	RA	0.64	Reject	1
ASM-X47A-SW-E-3.9-4.4	JC58072-6R	CHROMIUM (HEXAVALENT)	U	U	RA	0.62	Reject	1

Note: A “U” under Method Blank column indicates a nondetect result.
A “U” under the Laboratory Sample Result and Validation Sample Result columns indicates a nondetect result at the RL.

NJDEP Laboratory Footnote

1. The sample result was rejected because the soluble and insoluble matrix spike recoveries were less than 50%.

Attachment B

Data Validation Report Form

Client Name: PPG Industries	**Project Number:** 60540263.GA.RA.COS.2017.ASM
Site Location: Al Smith Building Post Remediation Sampling, Jersey City, NJ	**Project Manager:** Lindi Higgins
Laboratory: SGS/Accutest, Dayton, NJ	**Type of Validation:** Full
Laboratory Job No: JC58072	**Date Checked:** 01/08/2018
Validator: Charlene Livingston Flint	**Peer:** Mary Kozik

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X			
Field I.D. included?	X			
Laboratory I.D. included?	X			
Did data package sample IDs match sample IDs on COC?	X			
Did electronic data deliverable (EDD) sample IDs match COC sample IDs?	X			
Did data package sample IDs match electronic data deliverable (EDD) sample IDs?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6 ºC?	X			3.0 ºC
Signed COCs included?	X			
Date of sample collection included?	X			
Date of sample digestion included?	X			
Holding time to digestion met criteria? (Soils -30 days from collection to digestion.)	X			
Date of analysis included?	X			
Holding time to analysis met criteria? (Soils -168 hours from digestion to analysis; Aqueous - 24 hours from collection to analysis.	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			
Definitions: MDL - Method Detection Limit; %R - Percent Recovery; RL - Reporting Limit; RPD - Relative Percent Difference; RSD - Relative Standard Deviation :Corr - Correlation Coefficient.				

ITEM	YES	NO	N/A	COMMENTS
Initial calibration documentation included in lab package?	X			
1) Blank plus 4 standards (7196A) or blank plus 3 standards (7199)	X			
2) Correlation coefficient of =0.995 (7196A) or =0.999 (7199)	X			
3) Calibrate daily or each time instrument is set up.	X			
Calibration Check Standard (CCS) for 7196A and Quality Control Sample (QCS) for 7199 Included in Lab Package?	X			
1) %R criteria met? (90 - 110%)	X			
2) Correct frequency of one per every 10 samples	X			
3) CCS and QCS from independent source and at mid- level of calibration curve	X			
Calibration Blanks	X			
1) Analyzed prior to initial calibration standards and after each CCS/QCS?	X			
2) Absolute value should not exceed MDL.	X			
Method Blank, Field Blanks and/or Equipment Blanks Included in Lab Package?	X			
1) Method blank analyzed with each preparation batch?	X			
2) Absolute value should not exceed MDL.	X			
Eh and pH Data	X			
1) Eh and pH data was included and plotted for all samples?	X			
Soluble Matrix Spike Data Included in Lab Package?	X			JC58072-2, -2R
1) Soluble Matrix %R criteria met? (75-125%R).		X		See table
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?		X		Spiked at 59 and 58.8 mg/kg. No impact on data.
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Insoluble Matrix Spike Data Included in Lab Package?	X			
1) Insoluble Matrix %R criteria met? (75-125%R).		X		See table
2) Was the spike concentration around 400 to 800 mg/Kg?		X		Spiked at 1400 and 1660 mg/kg. No impact on data.
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Post Digestion Spike	X			

ITEM	YES	NO	N/A	COMMENTS
1) Post Digestion Spike %R criteria met? (85-115%R).	X			Reanalysis met QC limits.
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?	X			
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Sample Duplicate Data Included in Lab Package?	X			JC58702-2, -2R
1) RPD criteria met? (RPD < 20%) if both results are ≥4x RL or control limit of± RL if both results are <4xRL.	X			
2) Was a sample duplicate analyzed at the frequency of 1 per batch or 20 samples?	X			
Was a Laboratory Control Sample (LCS) Included in Lab Package?	X			
1) %R criteria met? (80-120%R).	X			
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples?	X			
Were any Field Duplicate samples submitted with this SDG?	X			JC58072-5R & -8
1) RPD criteria met? (RPD < 20%) if both results are ≥4x RL or control limit of± RL if both results are <4xRL.	X			<4xRL, Abs Diff<RL Accept
Were all sample quantitation and reporting requirements met?	X			
1) Were all solid samples reported with percent solids > 50%?	X			
2) Were any samples analyzed or reported with dilutions?	X			Sample JC58072-3 diluted up to 5X.
Miscellaneous Items	X			
1) For soils by 7196A, was the pH within a range of 7.0-8.0?	X			
2) For soils by 7199, was the pH within a range of 9.0-9.5?	X			
3) For aqueous by 7196A, was the pH with a range of 1.5-2.5?	X			
4) For soils (3060A), was the digestion temperature 90-95C for at least 60 minutes?	X			
5) For 7199, was each sample injected twice and was the RPD ≤20?		X		JC58072-2 RPD>20 Results not reported for -2R; therefore, no qualification was made

Matrix Spikes

Sample ID	Lab ID	Analyte	Matrix Spike	% Recovery	Lower Limit	Upper Limit	PDS	PDS Limit	Action
ASM-X46A-PB-10.2-10.7	JC58072-2	CHROMIUM (HEXAVALENT)	Insoluble	4.3	75	125	17.6, pH adjusted 42.9	85-115	Reject (RA)
ASM-X46A-PB-10.2-10.7	JC58072-2	CHROMIUM (HEXAVALENT)	Soluble	2.2	75	125			
ASM-X46A-PB-10.2-10.7	JC58072-2R	CHROMIUM (HEXAVALENT)	Soluble	0.3	75	125	100	85-115	Reject (RA)
ASM-X46A-PB-10.2-10.7	JC58072-2R	CHROMIUM (HEXAVALENT)	Insoluble	2.0	75	125			

Field Duplicates

Sample ID	Duplicate ID	Analyte	Sample Result	Qual	Duplicate Result	Qual	QL	Units	RPD	Action
ASM-X47A-PB-5.9-6.4	ASM-X47A-PB-5.9-6.4X	CHROMIUM (HEXAVALENT)	0.83		0.52	U	0.5	mg/kg	42.3	SR <4xRL, ABS DIFF<RL, Accept

Percent Solids

Sample ID	Percent Solids (%)	Status
ASM-X46A-PB-10.2-10.7	67.8	ok @50%
ASM-X46A-SW-E-6.2-6.7	68.7	ok @50%
ASM-X46A-SW-E-8.2-8.7	63.7	ok @50%
ASM-X47A-PB-5.9-6.4	78.8	ok @50%
ASM-X47A-PB-5.9-6.4X	76.5	ok @50%

Sample ID	Percent Solids (%)	Status
ASM-X47A-SW-E-1.9-2.4	62.5	ok @50%
ASM-X47A-SW-E-3.9-4.4	62.8	ok @50%

7199 Replicate RPDs

Sample ID	Rep 1 (ppm)	Rep 2 (ppm)	RPD%	RPD Criteria ≤20
JC58072-2R	0.020	0.025	22.2%	Estimate (J)
JC58072-3R	1.497	1.504	0.5%	OK
JC58072-4R	0.712	0.715	0.4%	OK
JC58072-5R	0.155	0.159	2.5%	OK
JC58072-6R	0	0.016	NC	OK
JC58072-7R	0.106	0.1	5.8%	OK
JC58072-8R	0	0.009	NC	OK

NC- Not calculable

SDG#: JC58072/ Method 7196	x - concentration	y - response
Batch: GN74471		
Cr+6 ICAL 12/28/17	0	0
Soil	0.01	0.01
(p. 68 of data pkg)	0.05	0.042
	0.1	0.085
	0.3	0.24
	0.5	0.397
	0.8	0.620
	1	0.824

				(p. 67 of data pkg)
AECOM Calculated Offset	0.00003	OK	Reported Offset	-0.00003
AECOM Slope	0.8035	OK	Reported Slope	0.8035
AECOM Calculated r	0.99926	OK	Reported r	0.99926

LCS calculation	**GP10247-B2**	**P. 38,68**		
Background Absorbance	0			
Total absorbance	0.391			
Total absorbance - background	0.391			
Instrument Concentration	0.487			
Sample weight (mg/kg)	0.0025			
Final Volume (L)	0.1			
Dilution Factor	50			
AECOM Calculated LCS Result (mg/Kg)	973	OK	Reported Result (mg/Kg)	973

%R = Found/True*100	**GP10247-B2**	**P. 38,68**		
True Value (mg/kg)	1029.7			
AECOM Calculated %R	94.5	OK	Reported %R	94.5

MS calculation	**GP10247-S2**	**P. 40,48,68**	**JC58072-2**	
Background reading	0.005			
Total absorbance	0.085			
Total absorbance - background	0.08			
Instrument Concentration	0.0995			
Sample weight (mg/kg)	0.00243			
Final Volume (L)	0.1			
Percent solids	0.678			
Dilution Factor	10			
AECOM Calculated MS Result (mg/Kg)	60.4	OK	Reported Result (mg/Kg)	60.4

%R = Found/True*100	**GP10247-S2**	**P. 40,48,68**	**JC58072-2**	
True Value (mg/kg)	1400			
Native concentration (mg/Kg)	0			
AECOM%R	4.3	OK	Reported %R	4.3

Percent Solids	**JC58072-2**	**P. 48**	**ASM-X46A-PB-10.2-10.7**	
Empty dish weight=	26.86			
Wet weight=	34.71			
Dry weight=	32.18			
AECOM %solids =	67.8	OK	Reported %solids=	67.8

Reporting Limit	**JC58072-2**	**P. 13,48,68**	**ASM-X46A-PB-10.2-10.7**	
Low Standard	0.01			
Initial weight (mg/kg)	0.00244			
Final volume (L)	0.1			
Percent solids	0.678			
Dilution Factor	1			
Reporting Limit	0.60	OK, rounding	Reported RL (mg/Kg)=	0.59

Sample Calculations	**JC58072-2**	**P. 13,48,68**	**ASM-X46A-PB-10.2-10.7**	
Background reading	0.022			
Total absorbance	0.025			
Total absorbance - background	0.003			
Instrument Response	0.004			
Sample weight (mg/kg)	0.00244			
Final Volume (L)	0.1			
Percent solids	0.678			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.22	OK, <MDL, ND	Reported Result (mg/Kg)	0.56 U

SDG: JC58072R/ Method 7199 **Batch GN74585** Cr+6 ICAL 1/02/17 Soil (p. 83 of data package)	x - concentration	y - response (area) mAU*min	
	0.00	0.0000	STDA
	0.005	0.0594	STDB
	0.05	0.4429	STDC
	0.1	0.8744	STDD
	0.5	4.2776	STDE

				(p. 83 of data package)
AECOM Calculated Offset	0.0185	OK	Reported Offset	0.0185
AECOM Slope	8.5194	OK, rounding	Reported Slope	8.5193
AECOM Calculated r	1.0000	OK	Reported r	1.0000

LCS calculation	**GP10280-B2**	**P. 38,105**		
Highest replicate response (AREA, mAU*min)	1.982			
Instrument Concentration (ug/L)	0.230			
Sample weight	0.0025			
Percent solids	1			
Dilution Factor	100			
AECOM Calculated LCS Result (mg/Kg)	922	OK, rounding	Reported Result (mg/Kg)	924

%R = Found/True*100	**GP10280-B2**	**P. 38,105**		
True Value (mg/kg)	960			
AECOM Calculated %R	96.0	OK, rounding	Reported %R	96.3

MS calculation	**GP10280-S2**	**P. 40,48,84,136**	**JC58072-2R**	
Highest replicate response (mAU*min)	2.398			
Instrument Concentration (ug/L)	0.2793			
Sample weight	0.00244			
Percent solids	0.678			
Dilution Factor	2			
AECOM Calculated MS Result (mg/Kg)	33.8	OK	Reported Result (mg/Kg)	33.8

%R = Found/True*100	**GP10280-S2**	**P. 40,48,84,136**	**JC58072-2R**	
True Value (mg/kg)	1660			
Native concentration (mg/Kg)	0			
%R	2.0	OK	Reported %R	2.0

Percent Solids	**JC58072-2R**	**P. 48**	**ASM-X46A-PB-10.2-10.7**	
Empty dish weight=	26.86			
Wet weight=	34.71			
Dry weight=	32.18			
AECOM %solids =	67.8	OK	Reported %solids=	67.8

Reporting limit	**JC58072-2R**	**P. 48,84,110**	**ASM-X46A-PB-10.2-10.7**	
Low Standard	0.01			
Initial weight (g)	0.00246			
Final volume (L)	0.1			
Percent solids	0.678			
Dilution Factor	1			
Reporting Limit	0.60	OK, rounding	Reported RL (mg/Kg)=	0.59

Sample Calculations	**JC58072-2R**	**P. 48,84,110**	**ASM-X46A-PB-10.2-10.7**	
Background reading from highest response	0.00001			
Instrument Response highest response	0.025			
Total response for replicate 1	0.02499			
Instrument Response (mg/L)	0.001			
Sample weight (mg)	0.00246			
Final Volume (L)	0.1			
Percent solids	0.678			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.05	OK, <MDL, ND		0.56 U

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Data Validation Report

Project:	PPG-Caven Point/Pacific Avenue	
Laboratory:	Accutest, Dayton, NJ	
Laboratory Job No.:	JC70997	
Analysis/Method:	Metals by ICP-AES/ SW846-6010D	
Validation Level:	Limited	
Site Location/Address:	Caven Point and Pacific Avenue, Jersey City, NJ	
AECOM Project No:	60279173.GA.RI.ASB	
Prepared by:	Charlene Livingston Flint /AECOM	Completed on: 08/13/2018
Reviewed by:	Mary Kozik /AECOM	File Name: JC70997_2018-08-13_DVReport-F

Introduction

The data were reviewed in accordance with the FSP-QAPP and the following NJDEP validation Standard Operating Procedures (SOP):

- NJDEP Office of Data Quality SOP 5.A.16, Rev 1 (May 2002), Quality Assurance Data Validation of Analytical Deliverables for Inorganics (based on USEPA SW-846 Methods)

The results of quality control data analyzed with site samples were used to assess the overall reliability of the data. The following qualifiers were used to identify data quality issues:

U: Indicates the analyte was not detected in the sample above the sample reporting limit.

J: Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

UJ: Indicates the analyte was not detected above the reporting limit and the reporting limit was approximate.

J+: Indicates the analyte was positively identified; the associated numerical value is an estimated quantity with a potential high bias.

J-: Indicates the analyte was positively identified; the associated numerical value is an estimated quantity with a potential low bias.

UB: The analyte concentration is less than or equal to three (3) times the concentration in the associated method/prep blank. The presence of the analyte in the sample is negated (UB) due to laboratory contamination.

JB: The analyte concentration is greater than three (3) times, but less than or equal to ten (10) times the concentration in the associated method/prep blank. The presence of that analyte in the sample is considered "real". The concentration is quantitatively qualified (JB) due to method blank contamination.

R: The sample result was rejected due to serious deficiencies; the presence or absence of the analyte could not be confirmed.

RA: The sample result was rejected but is still considered usable.

Sample Information

The samples listed below were collected by AECOM on July 31, 2018 as part of the PPG-Caven Point/Pacific Avenue sampling at Caven Point and Pacific Avenue, Jersey City, New Jersey. Only the samples and parameters listed below were validated.

Field ID	Laboratory ID	Matrix	Fraction
PAC-CC39A-0.7-1.2	JC70997-1	Soil	Metals
PAC-CC39A-0.7-1.2X (Field Duplicate of PAC-CC39A-0.7-1.2)	JC70997-2	Soil	Metals
PAC-CC39A-3.4-3.9	JC70997-3	Soil	Metals
PAC-FB20180731 (Equipment Blank)	JC70997-4	Aqueous	Metals

The samples were collected following the procedures detailed in the Work Order for Garfield Avenue Remedial Action (GARA) at Caven Point and Pacific Avenue, Jersey City, NJ and the Field Sampling Plan/Quality Assurance Project Plan for Non-Residential and Residential Chromium Sites Hudson County, New Jersey (December 2011).

General Comments

The data package was complete. Quality control (QC) issues identified during validation are discussed below. Refer to the Target Analyte Summary Hit List(s) in Attachment A for a listing of all detected results, qualified results, and associated qualifications, where applicable. The nonconformances for each section discussed below are presented in Attachment B.

TAL Metals (Antimony only)

MS Results

For the MS/MSD analysis on sample PAC-CC39A-3.4-3.9 (JC70997-3), the recoveries of antimony did not meet the quality control criteria of 75-125%. The positive and nondetect results for antimony in the associated soil samples were qualified as estimated (J/UJ) with potential low bias.

Refer to Attachment A (Target Analyte Summary Hitlist) and the nonconformance table in Attachment B for a list of sample results impacted by matrix spike recoveries.

Sample Results

Reported results (flagged B by the laboratory) that were less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL) are approximate values that have been qualified as estimated (J).

Data Quality and Usability

In general, these data appear to be valid and may be used for decision-making purposes. No data were rejected. Qualified results, if applicable, are presented in Attachments A and B.

Sample results qualified due to low MS recoveries are usable as estimated values with the potential for low bias.

Sample results reported between the MDL and RL are usable as estimated values with an unknown directional bias.

ATTACHMENTS

Attachment A: Target Analyte Summary Hit List(s)

Attachment B: Data Validation Report Form

Attachment A

Target Analyte Summary Hit List(s)

Soil Target Analyte Summary Hit List (Antimony)

Site Name PPG-Caven Point/Pacific Avenue
Sampling Date July 31, 2018
Lab Name/ID Accutest, Dayton, NJ
SDG No JC70997
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID PAC-FB20180731

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
PAC-CC39A-0.7-1.2	JC70997-1	ANTIMONY	U	0.90B	0.90J	2.3	Qualify	1,2
PAC-CC39A-0.7-1.2X	JC70997-2	ANTIMONY	U	U	UJ	2.2	Qualify	1
PAC-CC39A-3.4-3.9	JC70997-3	ANTIMONY	U	11.2B	11.2J	12	Qualify	1,2

Note: A “U” under Method Blank column indicates a nondetect result.
A “U” under the Laboratory Sample Result and Validation Sample Result columns indicates a nondetect result at the RL.

NJDEP Laboratory Footnote

1. The reported or nondetected value was qualified because the MS/MSD spike recovery was less than 75 percent.
2. The reported result was greater than the MDL but less than the RL and qualified (J) as estimated by the laboratory.

Attachment B

Data Validation Report Form

Client Name: PPG Industries	**Project Number:** 60279173
Site Location: PPG-Caven Point/Pacific Avenue, Jersey City, NJ	**Project Manager:** William Spronz
Laboratory: Accutest, Dayton, NJ	**Type of Validation:** Limited
Laboratory Job No: JC70997	**Date Checked:** 08/13/2018
Validator: Charlene Livingston Flint	**Peer:** Mary Kozik

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X			
Field I.D. included?	X			
Laboratory I.D. included?	X			
Did data package sample IDs match sample IDs on COC?	X			
Did electronic data deliverable (EDD) sample IDs match COC sample IDs?	X			
Did data package sample IDs match electronic data deliverable (EDD) sample IDs?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6 ºC?	X			3.0 ºC
Signed COCs included?	X			
Date of sample collection included?	X			
Date of sample digestion included?	X			
Date of analysis included?	X			
Holding time met QC criteria? (Metals -180 days from sample collection; Mercury - 28 days from sample collection. If HT exceeded by 10 days R all results.	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			
Definitions: MDL - Method Detection Limit; %R - Percent Recovery; RL - Reporting Limit; RPD - Relative Percent Difference; RSD - Relative Standard Deviation :Corr - Correlation Coefficient.				

ITEM	YES	NO	N/A	COMMENTS
Sample dilutions?	X			JC70997-3 diluted 5X.
Initial calibration documentation included in lab package?			X	N/A for Limited Validation
1) Calibrate daily or each time instrument is set up.			X	
2) ICP (6010) - plus 1 standard?			X	
3) Cn and Hg -Blank plus 5 standards?			X	
Initial Calibration Verification Standard (ICV) for ICP (6010) and Initial Calibration Check Standard (ICCS) for Hg (7470/7471) included in lab package?			X	N/A for Limited Validation
1) Analyzed immediately after initial calibration?			X	
2) %R criteria met? (90-110%).			X	
3) Spot check ICV/ICCS results for several analytes.			X	
Continuing Calibration Verification Standard (CCV) for ICP (6010) and Calibration Check Standard (CCS) for Hg (7470/7471) included in Lab Package?			X	N/A for Limited Validation
1) Analyzed immediately after each ICV/ICC/CB and after every 10 samples?			X	
2) CCS and CCV from independent source and at mid-level of calibration curve?			X	
3) %R criteria met? (90-110%R).			X	
4) Spot check CCV/CCS results for several analytes.			X	
Low Calibration Standard (CRI) included in Lab Package?			X	
1) %R criteria met? - 50-150% for Co, Mn, Zn, by ICP-MS; Pb, Tl by 6010; 70-130% all others..			X	
Calibration Blanks			X	N/A for Limited Validation
1) Analyzed after daily calibration and after each ICV/ICC/CCV/CCS and after every 10 samples?			X	
2) Absolute value <3xIDL?			X	
Method Blank Included in Lab Package?	X			MP8427
1) Method blank analyzed with each preparation batch or every SDG, or 1/20 samples? No aqueous MB required for FB/EB if only soil samples were analyzed.	X			
2) Method blank analyzed 1/20 samples?	X			
3) MB results nondetect?	X			ND
4) Negative MB result reported?		X		

ITEM	YES	NO	N/A	COMMENTS
Field Blanks/Equipment Blanks Included in Lab Package?	X			JC70997-4
1) FB/EB result non-detect?	X			ND
ICP Interference Check Sample (ICS) included in Lab Package?			X	N/A for Limited Validation
1) Analyzed at beginning of analytical run?			X	
2) %R criteria met? (80-120%)			X	
3) Spot check accuracy of %Rs			X	
Matrix Spike/Matrix Spike Duplicate Data Included in Lab Package?	X			JC70997-1 & -2
1) MS/MSD %R (75-125%R) and RPD (20%) criteria met?		X		%R low See table
2) Was a sample spiked at the frequency of 1/batch or 20 samples?	X			
3) Was the MS performed on a site sample?	X			
4) Was the MS performed on a FB/EB or TB?		X		
Post Digestion Spike	X			JC70997-3
1) %R criteria met? (75-125%R)	X			
2) Was the spike performed on a FB/EB or TB?		X		
3) Was a sample spiked at the frequency of 1/batch or 20 samples?	X			
Laboratory Duplicate Data Included in Lab Package?		X		
1) LCS %R criteria met? (80-120%R).			X	
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples?			X	
Was a Laboratory Control Sample (LCS) Included in Lab Package?	X			
1) LCS %R criteria met? (80-120%R). If no, J/UJ all affected analytes(s) for all samples in the same batch/SDG.	X			
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples? If no, J/UJ affected analyte(s) for all samples in the same batch/SDG.	X			
Serial Dilution			X	N/A for Limited Validation
1) %D (<10%R) criteria met? -			X	
2) Was the frequency 1/batch or 20 samples?			X	

ITEM	YES	NO	N/A	COMMENTS
3) Was a site sample used?			X	
4) Was a FB/EB or TB used?			X	
5) Spot check accuracy of %Ds.			X	
Field Duplicate Data included in Lab Package?	X			JC70997-1 & -2
Aqueous - Is RPD is <20%?			X	
Soil - Is RPD is <35%?	X			One sample <RL, other ND, <5xRL, ABS Diff<RL, Accept
Percent Solids data included in Lab Package?	X			
1) %Solids criteria (Reg 2 criteria) met? (>/=50%)	X			

Matrix Spikes

Sample ID	Analyte	% MS Recovery	% MSD Recovery	Lower Limit	Upper Limit	RPD	RPD Limit	Action
PAC-CC39A-3.4-3.9	ANTIMONY	64.8	53.4	75	125	17.8	20	Estimate (J/UJ)

Field Duplicates

Sample ID	Duplicate ID	Compound	Sample Result	Duplicate Result	LOQ	Units	RPD	Action
PAC-CC39A-0.7-1.2	PAC-CC39A-0.7-1.2X	ANTIMONY	0.90J	0.46U	0.47/0.46	mg/kg	NC	One sample <RL, other ND, <5xRL, ABS Diff<RL, Accept

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Data Validation Report

Project:	PPG 10 West PDI	
Laboratory:	SGS/Accutest, Dayton, NJ	
Laboratory Job No.:	JC99900	
Analysis/Method:	Hexavalent Chromium SW846 3060A/7196	
Validation Level:	Full	
Site Location/Address:	70 Carteret Ave, Jersey City, New Jersey	
AECOM Project No:	60595458.PDI	
Prepared by:	Sharon McKechnie /AECOM	Completed on: 1/8/2020
Reviewed by:	Elissa McDonagh /AECOM	File Name: JC99900_2020-1-08_DVReport-F.docx

Introduction

The data were reviewed in accordance with the FSP-QAPP and the following NJDEP validation Standard Operating Procedure (SOP):

- NJDEP Office of Data Quality SOP 5.A.10, Rev 3 (September 2009), SOP for Analytical Data Validation of Hexavalent Chromium - for USEPA SW-846 Method 3060A, USEPA SW-846 Method 7196A.

The results of quality control data analyzed with site samples were used to assess the overall reliability of the data. The following qualifiers were used to identify data quality issues:

U: Indicates the analyte was not detected in the sample above the sample reporting limit.

J: Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

J+: Indicates the analyte was positively identified; the associated numerical value is an estimated quantity with a potential high bias.

J-: Indicates the analyte was positively identified; the associated numerical value is an estimated quantity with a potential low bias.

UJ: Indicates the analyte was not detected above the reporting limit and the reporting limit was approximate.

UB: The analyte concentration is less than or equal to three (3) times the concentration in the associated method/prep blank. The presence of the analyte in the sample is negated (UB) due to laboratory contamination.

JB: The analyte concentration is greater than three (3) times, but less than or equal to ten (10) times the concentration in the associated method/prep blank. The presence of that analyte in

the sample is considered "real". The concentration is quantitatively qualified (JB) due to method blank contamination.

R: The sample result was rejected due to serious deficiencies; the presence or absence of the analyte could not be confirmed.

RA: The sample result was rejected but is still considered usable.

Sample Information

The samples listed below were collected by AECOM on December 10, 2019 and December 09, 2019 as part of the PPG 10 West PDI at 70 Carteret Ave, Jersey City, New Jersey. Only the samples and parameters listed below were validated.

Field ID	Laboratory ID	Matrix	Fraction
10W-I44A-13.5-14.0	JC99900-15,15R	Soil	Hexavalent Chromium
10W-I44A-2.0-2.5	JC99900-14,14R	Soil	Hexavalent Chromium
10W-J31A-0.5-1.0	JC99900-1,1R	Soil	Hexavalent Chromium
10W-J31A-10.0-10.5	JC99900-7,7R	Soil	Hexavalent Chromium
10W-J31A-12.0-12.5	JC99900-8,8R	Soil	Hexavalent Chromium
10W-J31A-14.0-14.5	JC99900-9,9R	Soil	Hexavalent Chromium
10W-J31A-16.0-16.5	JC99900-10,10R	Soil	Hexavalent Chromium
10W-J31A-18.0-18.5	JC99900-11,11R	Soil	Hexavalent Chromium
10W-J31A-18.5-19.0	JC99900-12,12R	Soil	Hexavalent Chromium
10W-J31A-19.0-19.5	JC99900-13,13R	Soil	Hexavalent Chromium
10W-J31A-2.0-2.5	JC99900-2,2R	Soil	Hexavalent Chromium
10W-J31A-4.0-4.5	JC99900-3,3R	Soil	Hexavalent Chromium
10W-J31A-4.0-4.5X (Field Duplicate of Sample 10W-J31A-4.0-4.5)	JC99900-4,4R	Soil	Hexavalent Chromium
10W-J31A-6.0-6.5	JC99900-5,5R	Soil	Hexavalent Chromium
10W-J31A-8.0-8.5	JC99900-6,6R	Soil	Hexavalent Chromium
FB-20191209 (Equipment Blank)	JC99900-17	Aqueous	Hexavalent Chromium

The samples were collected following the procedures detailed in the Workorder for PPG 10 West PDI at 70 Carteret Ave, Jersey City, New Jersey and the Field Sampling Plan/Quality Assurance Project Plan for Non-Residential and Residential Chromium Sites Hudson County, New Jersey (December 2011).

General Comments

The data package was complete. Quality control (QC) issues identified during validation are discussed below. Refer to the Target Analyte Summary Hit List(s) in Attachment A for a listing of all detected results, qualified results, and associated qualifications, where applicable. The nonconformances for each section discussed below are presented in Attachment B.

MS Results

Sample 10W-J31A-0.5-1.0 (JC99900-1) was selected for the soil matrix spike analysis and used for supporting data quality recommendations. The soluble and insoluble matrix spike (MS) recoveries from the initial batch were 68.6% and 90.0%, respectively. The soluble MS recovery did not meet the quality control (QC) criteria of 75-125%R. The post digestion spike (PDS) recovery was 100.7%, which met the PDS criteria of 85-115%.

Based on a soluble MS recovery less than 75%R, the MS and associated samples were reanalyzed using Method 7196. The soluble and insoluble matrix spike recoveries from the re-analysis were 73.4% and 94.9%, respectively. The soluble MS recovery did not meet the QC criteria of 75-125%R. The PDS recovery for the re-analysis batch was 101.8%, which met the PDS criteria of 85-115%.

Since the soluble MS recoveries were outside the acceptable QC limit of 75-125%, additional parameters were analyzed to determine if possible matrix interferences could be the cause for the poor matrix spike recoveries. All the soil samples were tested for pH and oxidation reduction potential (ORP) and plotted on an Eh/pH phase diagram chart. From this chart, the source sample for the matrix spike analysis was plotted below the phase change line, indicating reducing potential within the sample matrix, incapable of supporting hexavalent chromium. Analyses for ferrous iron, sulfide screen, and total organic carbon (TOC) were performed on the MS source sample to confirm the oxidizing/reducing potential within the sample matrix. The sulfide screen was reported as nondetect, indicating no reducing agents within the sample matrix; however, the ferrous iron (0.46%) and the TOC results (63,300 mg/Kg) were positive, indicating potential reducing agents within the sample matrix.

Since the soluble MS recoveries from both the initial and reanalysis did not meet the MS QC requirements, but at least one MS recovery was greater than 50%, the highest detected hexavalent chromium result or the nondetect hexavalent chromium result with the lowest reporting limit (RL) was reported for each soil sample. The reported positive and nondetect hexavalent chromium results in all the soil samples in this SDG were qualified as estimated (J-/UJ) due to the poor MS recoveries.

Field Duplicate Results

The reported field duplicate pair in this SDG was 10W-J31A-4.0-4.5 (JC99900-3R)/10W-J31A-4.0-4.5X (JC99900-4R).

The parent sample and field duplicate sample results were less than 4 times the RL. The absolute difference between the reported field duplicate results was greater than the absolute difference criteria of less than or equal to the RL; therefore; all reported hexavalent chromium soil results were qualified as estimated (J/UJ).

Percent Solids

The moisture content for samples 10W-J31A-18.0-18.5 (JC99900-11) and 10W-J31A-19.0-19.5 (JC99900-13) exceeded the acceptable limit of 50%; therefore, the results were qualified (J) as estimated.

Data Quality and Usability

In general, these data appear to be valid and may be used for decision-making purposes. No data were rejected. Qualified results are presented in Attachments A and B.

Based on MS recoveries outside the 75-125% QC criteria, but greater than 50%, all soil samples were qualified as estimated (J/UJ) for hexavalent chromium. The MS sample matrix appears to be reducing based on the Eh-pH plot. In addition, the presence of TOC and ferrous iron may suggest that the matrix for this sample could be reducing and not capable of supporting hexavalent chromium. The highest detected hexavalent chromium result or the nondetect hexavalent chromium result with the lowest RL was reported.

All sample results were qualified as estimated for poor field duplicate precision.

Sample results reported between the MDL and RL, and or qualified due to high percent moisture content are usable as estimated values with an unknown directional bias.

It should be noted that the overall bias is considered to be indeterminate when cumulative nonconformances do not show a consistent bias or in cases of the presence of conflicting high and low biases.

ATTACHMENTS

Attachment A: Target Analyte Summary Hit List(s)

Attachment B: Data Validation Report Form

Attachment A

Target Analyte Summary Hit List(s)

Soil Target Analyte Summary Hit List (Hexavalent Chromium)

Site Name PPG 10 West PDI
Sampling Date December 9, 2019
Lab Name/ID SGS/Accutest, Dayton, NJ
SDG No JC99900
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID FB-20191209

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
10W-I44A-13.5-14.0	JC99900-15R	CHROMIUM (HEXAVALENT)	U	4.6	4.6J	0.47	Qualify	1,3
10W-I44A-2.0-2.5	JC99900-14R	CHROMIUM (HEXAVALENT)	U	6.0	6.0J	0.46	Qualify	1,3
10W-J31A-0.5-1.0	JC99900-1	CHROMIUM (HEXAVALENT)	U	1.3	1.3J	0.42	Qualify	1,3
10W-J31A-10.0-10.5	JC99900-7R	CHROMIUM (HEXAVALENT)	U	U	UJ	0.56	Qualify	1,3
10W-J31A-12.0-12.5	JC99900-8R	CHROMIUM (HEXAVALENT)	U	U	UJ	0.66	Qualify	1,3
10W-J31A-14.0-14.5	JC99900-9	CHROMIUM (HEXAVALENT)	U	0.61B	0.61J	0.64	Qualify	1,3
10W-J31A-16.0-16.5	JC99900-10R	CHROMIUM (HEXAVALENT)	U	U	UJ	0.54	Qualify	1,3
10W-J31A-18.0-18.5	JC99900-11R	CHROMIUM (HEXAVALENT)	U	0.82	0.82J	0.79	Qualify	1,2,3
10W-J31A-18.5-19.0	JC99900-12R	CHROMIUM (HEXAVALENT)	U	0.99	0.99J	0.46	Qualify	1,3
10W-J31A-19.0-19.5	JC99900-13	CHROMIUM (HEXAVALENT)	U	2.4	2.4J	1.3	Qualify	1,2,3
10W-J31A-2.0-2.5	JC99900-2R	CHROMIUM (HEXAVALENT)	U	13.5	13.5J	0.48	Qualify	1,3
10W-J31A-4.0-4.5	JC99900-3R	CHROMIUM (HEXAVALENT)	U	1.3	1.3J	0.42	Qualify	1,3
10W-J31A-4.0-4.5X	JC99900-4R	CHROMIUM (HEXAVALENT)	U	0.45	0.45J	0.43	Qualify	1,3
10W-J31A-6.0-6.5	JC99900-5R	CHROMIUM (HEXAVALENT)	U	6.7	6.7J	0.67	Qualify	1,3
10W-J31A-8.0-8.5	JC99900-6R	CHROMIUM (HEXAVALENT)	U	1.1	1.1J	0.67	Qualify	1,3

Note: A “U” under Method Blank column indicates a nondetect result.
A “U” under the Laboratory Sample Result and Validation Sample Result columns indicates a nondetect result at the RL.

NJDEP Laboratory Footnote

1. The result was qualified as estimated because the MS recoveries were less than 75%, but at least one recovery was above 50%.

2. The reported value was qualified as estimated because the sample moisture content exceeded 50 percent.

3. The reported value was qualified due to poor field duplicate precision.

Attachment B

Data Validation Report Form

Client Name: PPG Industries	**Project Number:** 60595458.PDI
Site Location: PPG- 10 West PDI, Jersey City, NJ	**Project Manager:** Cameron Dixon
Laboratory: SGS/Accutest, Dayton, NJ	**Type of Validation:** Full
Laboratory Job No: JC99900	**Date Checked:** 1/8/2020
Validator: Sharon McKechnie	**Peer:** Elissa McDonagh

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X			
Field I.D. included?	X			
Laboratory I.D. included?	X			
Did data package sample IDs match sample IDs on COC?	X			
Did electronic data deliverable (EDD) sample IDs match COC sample IDs?	X			
Did data package sample IDs match electronic data deliverable (EDD) sample IDs?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6C?	X			3.9 °C
Signed COCs included?	X			
Date of sample collection included?	X			
Date of sample digestion included?	X			
Holding time to digestion met criteria? (Soils -30 days from collection to digestion.)	X			
Date of analysis included?	X			
Holding time to analysis met criteria? (Soils -168 hours from digestion to analysis; Aqueous - 24 hours from collection to analysis.	X			
Method reference included?	X			
Laboratory Case Narrative included?	X			
Definitions: MDL - Method Detection Limit; %R - Percent Recovery; RL - Reporting Limit; RPD - Relative Percent Difference; RSD - Relative Standard Deviation :Corr - Correlation Coefficient.				

ITEM	YES	NO	N/A	COMMENTS
Initial calibration documentation included in lab package?	X			
1) Blank plus 4 standards (7196A) or blank plus 3 standards (7199)	X			
2) Correlation coefficient of ≤0.995 (7196A) or ≤0.999 (7199)	X			
3) Calibrate daily or each time instrument is set up.	X			
Calibration Check Standard (CCS) for 7196A and Quality Control Sample (QCS) for 7199 Included in Lab Package?	X			
1) %R criteria met? (90 - 110%)	X			
2) Correct frequency of one per every 10 samples	X			
3) CCS and QCS from independent source and at mid- level of calibration curve	X			
Calibration Blanks	X			
1) Analyzed prior to initial calibration standards and after each CCS/QCS?	X			
2) Absolute value should not exceed MDL.	X			
Method Blank, Field Blanks and/or Equipment Blanks Included in Lab Package?	X			
1) Method blank analyzed with each preparation batch?	X			
2) Absolute value should not exceed MDL.	X			
Eh and pH Data	X			
1) Eh and pH data was included and plotted for all samples?	X			
Soluble Matrix Spike Data Included in Lab Package?	X			JC99900-1,1R
1) Soluble Matrix %R criteria met? (75-125%R).		X		See table
‘ 2) Was the spike concentration 40 mg/Kg or twice the sample concentration?	X			Spiked at 43.2 and 41.7 mg/kg. No impact on data.
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Insoluble Matrix Spike Data Included in Lab Package?	X			JC99900-1,1R
1) Insoluble Matrix %R criteria met? (75-125%R).	X			See table
2) Was the spike concentration around 400 to 800 mg/Kg?	X			Spiked at 742 and 814 mg/kg. No impact on data.
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			

ITEM	YES	NO	N/A	COMMENTS
Post Digestion Spike	X			JC99900-1,1R
1) Post Digestion Spike %R criteria met? (85-115%R).	X			See table
2) Was the spike concentration 40 mg/Kg or twice the sample concentration?	X			
3) Was a sample spiked at the frequency of 1 per batch or 20 samples?	X			
Sample Duplicate Data Included in Lab Package?	X			JC99900-1,1R
1) RPD criteria met? (RPD ≤20%) if both results are ≥4x RL or absolute difference ≤RL if either or both results are <4xRL.	X			RPD initial run 16.7%, rerun 9%
2) Was a sample duplicate analyzed at the frequency of 1 per batch or 20 samples?	X			
Was a Laboratory Control Sample (LCS) Included in Lab Package?	X			
1) %R criteria met? (80-120%R).	X			
2) Was an LCS analyzed at the frequency of 1/batch or 20 samples?	X			
Were any Field Duplicate samples submitted with this SDG?	X			JC99900-3R,4R
1) Were Field duplicate RPD criteria met? (RPD≤20% for both sample results >4xRL or absolute difference +/- RL if either or both results are <4xRL.		X		See Table
Were all sample quantitation and reporting requirements met?	X			nominal wt of 2.5g was used to calculate RLs
1) Were all solid samples reported with percent solids > 50%?		X		See Table
2) Were any samples analyzed or reported with dilutions?		X		
Miscellaneous Items	X			
1) For soils by 7196A, was the pH within a range of 7.0-8.0?	X			
2) For soils by 7199, was the pH within a range of 9.0-9.5?			X	
3) For aqueous by 7196A, was the pH with a range of 1.5-2,5?	X			
4) For soils (3060A), was the digestion temperature 90-95C for at least 60 minutes?	X			
5) For 7199, was each sample injected twice and was the RPD ≤20?			X	

Matrix Spikes

Sample ID	Lab ID	Analyte	Matrix Spike	% Recovery	Lower Limit	Upper Limit	PDS %R	PDS Limit	Action
10W-J31A-0.5-1.0	JC99900-1	CHROMIUM (HEXAVALENT)	Soluble	68.6	75	125	100.7	85-115	Estimate
10W-J31A-0.5-1.0	JC99900-1	CHROMIUM (HEXAVALENT)	Insoluble	90.0	75	125			
10W-J31A-0.5-1.0	JC99900-1R	CHROMIUM (HEXAVALENT)	Soluble	73.4	75	125	101.8	85-115	Estimate
10W-J31A-0.5-1.0	JC99900-1R	CHROMIUM (HEXAVALENT)	Insoluble	94.9	75	125			

Field Duplicates

Sample ID	Lab ID	Duplicate ID	Lab ID	Analyte	Sample Result	Duplicate Result	QL	Units	RPD	Action
10W-J31A-4.0-4.5	JC99900-3R	10W-J31A-4.0-4.5X	JC99900-4R	CHROMIUM (HEXAVALENT)	1.3	0.45	0.42	mg/kg	97.1	Estimate

Percent Solids

Sample ID	Lab ID	Percent Solids (%)	Status	Action
10W-J31A-18.0-18.5	JC99900-11,11R	48.9	>50% Moisture	Estimate
10W-J31A-19.0-19.5	JC99900-13,13R	31.7	>50% Moisture	Estimate

SDG#: JC99900/ Method 7196 GP25546	x - concentration	y - response
Cr+6 ICAL 12/16/19	0	0
Soil	0.01	0.009
(p. 89 of data pkg)	0.05	0.042
	0.1	0.082
	0.3	0.242
	0.5	0.411
	0.8	0.645
	1	0.811

				(p. 89 of data pkg)
AECOM Calculated Offset	0.0010	OK	Reported Offset	0.0010
AECOM Slope	0.8093	OK	Reported Slope	0.8093
AECOM Calculated r	0.99997	OK	Reported r	0.99997

LCS calculation	**GP22546-B1**	**P. 64,89**		
Background Absorbance	0			
Total absorbance	0.654			
Total absorbance - background	0.654			
Instrument Concentration	0.807			
Sample weight (mg/kg)	0.0025			
Final Volume (L)	0.1			
Dilution Factor	1			
AECOM Calculated LCS Result (mg/Kg)	32.3	OK	Reported Result (mg/Kg)	32.3

%R = Found/True*100	**GP22546-B1**	**P. 64,89**		
True Value (mg/kg)	40			
AECOM Calculated %R	80.7	OK, rounding	Reported %R	80.8

MS calculation	**GP22546-S1**	**P. 66,89**	**JC99900-1**	
Background reading	0.003			
Total absorbance	0.584			
Total absorbance - background	0.581			
Instrument Concentration	0.7166			
Sample weight (mg/kg)	0.00243			
Final Volume (L)	0.1			
Percent solids	0.953			
Dilution Factor	1			
AECOM Calculated MS Result (mg/Kg)	30.9	OK	Reported Result (mg/Kg)	30.9

%R = Found/True*100	**GP22546-S1**	**P. 66,89**	**JC99900-1**	
True Value (mg/kg)	43.2			
Native concentration (mg/Kg)	1.3			
AECOM%R	68.6	OK	Reported %R	68.6

Percent Solids	**JC99900-1**	**P. 38**	**10W-J31A-0.5-1.0**	
Empty dish weight=	20.91			
Wet weight=	31.92			
Dry weight=	31.4			
AECOM %solids =	95.3	OK	Reported %solids=	95.3

Reporting Limit	**JC99900-1**	**P. 14,89**	**10W-J31A-0.5-1.0**	
Low Standard	0.01			
Initial weight (mg/kg)	0.00242			
Final volume (L)	0.1			
Percent solids	0.953			
Dilution Factor	1			
AECOM Calculated Reporting Limit (mg/Kg)	0.43	OK	Reported RL (mg/Kg)=	0.42

Sample Calculations	**JC99900-1**	**P. 14,89**	**10W-J31A-0.5-1.0**	
Background reading	0.002			
Total absorbance	0.027			
Total absorbance - background	0.025			
Instrument Response	0.030			
Sample weight (mg/kg)	0.00242			
Final Volume (L)	0.1			
Percent solids	0.953			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	1.3	OK	Reported Result (mg/Kg)	1.3

Sample Calculations	**JC99900-6**	**P.24,89**	**10W-J31A-8.0-8.5**	
Background reading	0.08			
Total absorbance	0.094			
Total absorbance - background	0.014			
Instrument Response	0.016			
Sample weight (mg/kg)	0.0024			
Final Volume (L)	0.1			
Percent solids	0.588			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	1.1	OK	Reported Result (mg/Kg)	1.1

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Data Validation Report

Project	PPG – GA EF	Page	1
Laboratory	Test America, NJ		
Laboratory Job No.:	460-25550		
Analysis/Method:	Hexavalent Chromium SW846 3060A/7196A (including pH and Eh)		
Validation Level:	Full		
Site Location/Address:	Garfield Avenue Soil RI, Site 114, Jersey City, NJ		
AECOM Project Number:	60154801-0007		
Prepared by: Justin Webster/AECOM	Completed on: May 28, 2011		
Reviewed by: Lisa Krowitz/AECOM	File Name: 2011-05-28 Hex Cr DV Report 460-25550-F.docx		

Introduction

The results of quality control data analyzed with site samples were used to assess the overall reliability of the data. The following qualifiers were used to identify data quality issues:

U: Indicates the analyte was not detected in the sample above the sample reporting limit

J: Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample ("J-" indicates low bias "J+" indicates high bias)

UJ: Indicates the analyte was not detected above the reporting limit and the reporting limit was approximate.

R: The sample result was rejected due to serious deficiencies; the presence or absence of the analyte could not be confirmed.

Sample Information

The samples listed below were collected by AECOM on April 19, 2011 as part of the Garfield Avenue Soil RI sampling task at PPG Site 114, Jersey City, New Jersey.

Field ID	Laboratory ID	Matrix	Fraction
EF-B21-6.0	460-25550-1	Soil	Hexavalent Chromium
EF-B21-10.0	460-25550-3	Soil	Hexavalent Chromium
EF-B21-12.0	460-25550-4	Soil	Hexavalent Chromium
EF-B21-16.0	460-25550-6	Soil	Hexavalent Chromium
EF-B21-22.5	460-25550-8	Soil	Hexavalent Chromium
EF-B20-6.0	460-25550-9	Soil	Hexavalent Chromium
EF-B20-10.0	460-25550-11	Soil	Hexavalent Chromium
EF-B20-12.0	460-25550-12	Soil	Hexavalent Chromium
EF-B20-15.0	460-25550-13	Soil	Hexavalent Chromium
EF-B20-22.0	460-25550-15	Soil	Hexavalent Chromium
EF-B19-6.0	460-25550-16	Soil	Hexavalent Chromium
EF-B19-10.0	460-25550-17	Soil	Hexavalent Chromium
EF-B19-15.0	460-25550-19	Soil	Hexavalent Chromium
EF-B19-15.0X (field duplicate)	460-25550-20	Soil	Hexavalent Chromium
EF-B19-22.5	460-25550-23	Soil	Hexavalent Chromium
EF-B22-5.5	460-25550-24	Soil	Hexavalent Chromium
EF-B22-10.0	460-25550-25	Soil	Hexavalent Chromium
EF-B22-12.0	460-25550-26	Soil	Hexavalent Chromium
EF-B22-17.5	460-25550-27	Soil	Hexavalent Chromium
EF-B22-17.5X (field duplicate)	460-25550-28	Soil	Hexavalent Chromium
EF-B22-22.5	460-25550-29	Soil	Hexavalent Chromium
EB-041911 (field blank)	460-25550-30	Aqueous	Hexavalent Chromium
EF-B19-0.8	460-25550-31	Soil	Hexavalent Chromium
EF-B19-2.0	460-25550-32	Soil	Hexavalent Chromium
EF-B19-4.0	460-25550-34	Soil	Hexavalent Chromium
EF-B22-0.5	460-25550-35	Soil	Hexavalent Chromium
EF-B22-2.0	460-25550-36	Soil	Hexavalent Chromium
EF-B22-4.0	460-25550-38	Soil	Hexavalent Chromium
EF-B17-0.5	460-25550-39	Soil	Hexavalent Chromium
EF-B17-2.0	460-25550-40	Soil	Hexavalent Chromium
EF-B17-4.0	460-25550-42	Soil	Hexavalent Chromium
EF-B31-0.5	460-25550-43	Soil	Hexavalent Chromium
EF-B31-2.0	460-25550-44	Soil	Hexavalent Chromium
EF-B31-4.0	460-25550-46	Soil	Hexavalent Chromium

The samples were collected following the procedures detailed in the NJDEP - Approved Remedial Investigation Work Plan – Soil Non-Residential Chromate Chemical Production Waste Sites 114, 132, 133, 135, 137, 143, and 186 (March 2011).

General Comments

The data package was complete. Quality control (QC) issues identified during validation are discussed below. Refer to the Soil Target Analyte Summary Hit List for a listing of all detected results, qualified results, and associated qualifications, where applicable.

Matrix Spike Results

Due to the amount of samples collected with this SDG, two analytical batches had to be performed (batches 72611 and 72980). Each initial analysis also required a reanalysis under batches 72859 and 73000 due to failing quality control criteria.

Soil sample EF-B19-22.5 was selected for soluble and insoluble matrix spike analysis for the first set of samples. The initial analysis (batch 72611) soluble and insoluble matrix spike recoveries were 14% and 30%, respectively, which did not meet quality control criteria of 75-125%R. The post spike result for the initial analysis (72611) was recovered at 68%. Since the initial spike recoveries did not meet

acceptable criteria, the laboratory performed a re-extraction and re-analysis for all samples associated with this initial batch 72611 under batch 72859.

The re-analysis (batch 72859) soluble and insoluble matrix spike recoveries were 13% and 42%, respectively, which again did not meet the quality control criteria of 75-125%R. The post spike result for the re-analysis (72859) was recovered at 70%, which was below the quality control criteria of greater than 85%.

Since the re-analysis matrix spikes also failed to meet quality control criteria, additional parameters were analyzed to determine if possible matrix interferences could be the cause for the poor matrix spike recoveries. The samples were tested for pH and oxidative reduction potential (ORP) and plotted on an Eh/pH phase diagram chart. From this chart, the samples indicated a reducing environment not capable of supporting Cr(VI). The hexavalent chromium results associated with the first set of samples were reported from the initial analysis batch 72611 since the reanalysis MS also failed quality control criteria with little or no improvement. Due to the reducing conditions shown in the parent sample of the MS, all the soil hexavalent chromium results in batch 72611 were qualified as estimated (J/UJ) due to the low MS %Rs.

Soil sample EF-B22-22.5 was selected for soluble and insoluble matrix spike analysis for the second set of samples. The initial analysis (batch 72980) soluble and insoluble matrix spike recoveries were 23% and 51%, respectively, which did not meet quality control criteria of 75-125%R. The post spike result for the initial analysis (72980) was recovered at 79%. Since the initial spike recoveries did not meet acceptable criteria, the laboratory performed a re-extraction and re-analysis for all samples associated with this initial batch 72980 under batch 73000.

The re-analysis (batch 73000) soluble and insoluble matrix spike recoveries were 28% and 53%, respectively, which again did not meet the quality control criteria of 75-125%R. The post spike result for the re-analysis (73000) was recovered at 85%, which met the quality control criteria of 85% to 115%.

Since the re-analysis soluble and insoluble matrix spikes also failed to meet quality control criteria, additional parameters were analyzed to determine if possible matrix interferences could be the cause for the poor matrix spike recoveries. The samples were tested for pH and oxidative reduction potential (ORP) and plotted on an Eh/pH phase diagram chart. From this chart, source sample EF-B22-22.5 indicated a reducing environment not capable of supporting Cr(VI). The hexavalent chromium results associated with the second set of samples were reported from the reanalysis batch 73000 since the MS %Rs were improved and the PS %R met quality control criteria. However, due to the reducing conditions shown in the parent sample of the MS, all the soil hexavalent chromium results in batch 73000 were qualified as estimated (J/UJ) due to the low MS %Rs.

Field Duplicate Results

Samples EF-B19-15.0X and EF-B22-17.5X were the field duplicate samples associated with the samples in this data set. However, the relative percent differences (RPD) results for the initial analysis and re-analysis were not calculable due to a nondetect result in the original and duplicate analyses. No data qualifications were required.

Laboratory Duplicate Results

Samples EF-B19-22.5 and EF-B22-22.5 were the laboratory duplicate samples associated with the samples in this data set. However, the relative percent differences (RPD) results for the initial analysis and re-analysis were not calculable due to a nondetect result in the original and duplicate analyses. No data qualifications were required.

Percent Moisture

Samples EF-B22-17.5 and EF-B22-17.5X had moisture content that exceeded the quality control criteria of greater than 50% moisture. All impacted samples were reported nondetect and qualified (UJ) as estimated nondetect due to the percent moisture content exceedances.

Data Quality and Recommendations

In general, these data appear to be valid. The data user should use caution when evaluating the results because of the magnitude of sample bias due to matrix interferences.

Attachments

Attachment A Target Analyte Summary Hitlist(s)

Attachment B Data Validation Report Form

Attachment A

Target Analyte Summary Hitlist(s)

Soil Target Analyte Summary Hit List

Site Name PPG GAEF Site 114, Jersey City, NJ
Sampling Date April 19, 2011
Lab Name/ID Test America, Edison, NJ
SDG No 460-25550
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID EB-041911

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
EF-B17-0.5	460-25550-39	CHROMIUM (HEXAVALENT)	U	10.8	10.8	2.3		
EF-B17-0.5	460-25550-39	CHROMIUM (HEXAVALENT)	U	3.2	3.2	2.4	qualify	18
EF-B17-2.0	460-25550-40	CHROMIUM (HEXAVALENT)	U	6.1	6.1	2.4		
EF-B17-2.0	460-25550-40	CHROMIUM (HEXAVALENT)	U	10.0	10.0	2.4	qualify	18
EF-B17-4.0	460-25550-42	CHROMIUM (HEXAVALENT)	U	7.6	7.6	2.6		
EF-B17-4.0	460-25550-42	CHROMIUM (HEXAVALENT)	U	3.0	3.0	2.5	qualify	18
EF-B19-0.8	460-25550-31	CHROMIUM (HEXAVALENT)	U	0.80	0.80	2.3		
EF-B19-0.8	460-25550-31	CHROMIUM (HEXAVALENT)	U	U	U	2.3	qualify	20
EF-B19-10.0	460-25550-17	CHROMIUM (HEXAVALENT)	U	U	U	2.4	qualify	12, 20
EF-B19-15.0	460-25550-19	CHROMIUM (HEXAVALENT)	U	U	U	2.4	qualify	12, 20
EF-B19-15.0X	460-25550-20	CHROMIUM (HEXAVALENT)	U	U	U	2.4	qualify	12, 20
EF-B19-2.0	460-25550-32	CHROMIUM (HEXAVALENT)	U	U	U	2.3	qualify	20
EF-B19-22.5	460-25550-23	CHROMIUM (HEXAVALENT)	U	U	U	3.8	qualify	12, 20
EF-B19-4.0	460-25550-34	CHROMIUM (HEXAVALENT)	U	2.8	2.8	2.4	qualify	18
EF-B19-6.0	460-25550-16	CHROMIUM (HEXAVALENT)	U	U	U	2.4	qualify	12, 20
EF-B20-10.0	460-25550-11	CHROMIUM (HEXAVALENT)	U	U	U	2.4	qualify	12, 20
EF-B20-12.0	460-25550-12	CHROMIUM (HEXAVALENT)	U	U	U	2.4	qualify	12, 20
EF-B20-15.0	460-25550-13	CHROMIUM (HEXAVALENT)	U	U	U	2.4	qualify	12, 20
EF-B20-22.0	460-25550-15	CHROMIUM (HEXAVALENT)	U	U	U	2.6	qualify	12, 20
EF-B20-6.0	460-25550-9	CHROMIUM (HEXAVALENT)	U	U	U	2.4	qualify	12, 20
EF-B21-10.0	460-25550-3	CHROMIUM (HEXAVALENT)	U	U	U	2.5	qualify	12, 20
EF-B21-12.0	460-25550-4	CHROMIUM (HEXAVALENT)	U	1.7	1.7	2.4	qualify	11,13,18

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
EF-B21-12.0	460-25550-4	CHROMIUM (HEXAVALENT)	U	0.89	0.89	2.4		
EF-B21-16.0	460-25550-6	CHROMIUM (HEXAVALENT)	U	U	U	2.4	qualify	12, 20
EF-B21-22.5	460-25550-8	CHROMIUM (HEXAVALENT)	U	U	U	2.5	qualify	12, 20
EF-B21-6.0	460-25550-1	CHROMIUM (HEXAVALENT)	U	U	U	2.5	qualify	12, 20
EF-B22-0.5	460-25550-35	CHROMIUM (HEXAVALENT)	U	U	U	2.3	qualify	20
EF-B22-10.0	460-25550-25	CHROMIUM (HEXAVALENT)	U	U	U	2.4	qualify	12, 20
EF-B22-12.0	460-25550-26	CHROMIUM (HEXAVALENT)	U	U	U	2.4	qualify	12, 20
EF-B22-17.5	460-25550-27	CHROMIUM (HEXAVALENT)	U	U	U	6.4	qualify	12,20,22
EF-B22-17.5X	460-25550-28	CHROMIUM (HEXAVALENT)	U	U	U	6.3	qualify	12,20,22
EF-B22-2.0	460-25550-36	CHROMIUM (HEXAVALENT)	U	U	U	2.4	qualify	20
EF-B22-22.5	460-25550-29	CHROMIUM (HEXAVALENT)	U	U	U	2.8	qualify	20
EF-B22-4.0	460-25550-38	CHROMIUM (HEXAVALENT)	U	U	U	2.2	qualify	20
EF-B22-5.5	460-25550-24	CHROMIUM (HEXAVALENT)	U	U	U	2.6	qualify	12, 20
EF-B31-0.5	460-25550-43	CHROMIUM (HEXAVALENT)	U	U	U	2.1	qualify	20
EF-B31-2.0	460-25550-44	CHROMIUM (HEXAVALENT)	U	32.1	32.1	2.5	qualify	18
EF-B31-4.0	460-25550-46	CHROMIUM (HEXAVALENT)	U	181	181	14.4	qualify	18

Note: The “U” under Method Blank column indicates a nondetect result.
The “U” under the Laboratory Sample Result and Validation Sample Result columns indicate a nondetect result at the RL.

NJDEP Validation Footnote

11. The reported value was qualified (J) because the PVS recovery was less than 85 percent.
12. The non-detect value was qualified (UJ) because the PVS recovery was less than 85 percent. The possibility of a false negative exists.
13. The reported analyte was qualified (J) because the sample result was greater than the MDL and less than the RL.
18. The reported value was qualified (J) because the predigestion spike recovery was less than 75 percent.
20. The non-detected value was qualified (UJ) because the redigestion spike recovery was less than 75 percent. The possibility of a false negative exists.
22. The reported value was qualified (UJ) because the sample moisture content exceeded 50 percent.

Attachment B

Data Validation Report Form

Client Name: PPG Industries	**Project Number: 60154801-0007**
Site Location: PPG-GAEF	**Project Manager:** Robert Cataldo
Laboratory: TestAmerica, New Jersey	**Limited or Full Validation (circle one)**
Laboratory Job No: 460-25550	**Date Checked: 5/27/2011**
Validator: Justin Webster	**Peer: Lisa Krowitz**

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	x			1 Aqs TB and 33 Soils
Reporting Limits met project requirements?	x			Soils - 2.1 mg/kg to 181 mg/kg
Field I.D. included?	x			
Laboratory I.D. included?	x			
Sample matrix included?	x			
Sample receipt temperature 2-6ºC?	x			1.1°C cooler #1 and 1.7°C cooler #2; no actions taken for cooler temperature below 2°C.
Signed COCs included?	x			
Date of sample collection included?	x			4/19/11
Date of sample digestion included?	x			5/2/11, 5/3/11, and 5/5/11
Holding time to digestion met criteria? Soils -30 days from collection to digestion.	x			See below " Holding Times"
Date of analysis included?	x			Aqs 4/20/11. Soil 5/4/11, 5/5/11, 5/6/11, and 5/9/11
Holding time to analysis met criteria? Soils -168 hours from digestion to analysis. Aqueous – 24 hours from collection to analysis.	x			See Below "Holding Times"
Method reference included?	x			3060A/7196A
Laboratory Case Narrative included?	x			

Definitions: MDL – Method Detection Limit; %R – Percent Recovery; RL – Reporting Limit; RPD – Relative Percent Difference; RSD – Relative Standard Deviation :Corr – Correlation Coefficient.

Comments

Field Duplicates: EF-B24-10.0X and EF-B24-22.5X were selected as the field duplicates for this SDG. However, RPDs could not be calculated due to ND results for both the initial and duplicate analyses in both samples.

Sample dilutions:
EF-B31-4.0 = 5x

ITEM	YES	NO	N/A	COMMENTS
Initial Calibration Documentation Included in Lab Package?	x			Cal source (aqs WThcrIM2-00022) (soil WThcrIM-00022
1. Blank plus 4 standards (7196A) or blank plus 3 standards (7199), 2. Correlation coefficient of ≥0.995 (7196A) or ≥0.999 (7199). 3. Calibrate daily or each time instrument is set up.	x			1. Each analysis 1 blank and 5 cal STDs 2. All analyses meet CC 3. Yes
Calibration Check Standard (CCS) for 7196A and Quality Control Sample (QCS) for 7199 Included in Lab Package?	x			Check source (aqs WThcrIM4-00024) (soils WThcrIM3-00011)
1. %R criteria met? (90 - 110%). 2. Correct frequency of once every 10 samples 3. CCS and QCS from independent source and at mid level of calibration curve.	x			1. All met %R 2. Analyzed every 10 samples 3. Yes
Calibration Blanks	x			Aqs – 460-71129/1 and Soils 460-72611/1, 460-72859/1, 460-72980/1, and 460-73000
1. Analyzed prior to initial calibration standards and after each CCS/QCS? 2. Absolute value should not exceed MDL.	x			1. Yes 2. Yes
Method Blank and Field Blanks Included in Lab Package?	x			Field blank included with this SDG EB-041911
1. Method blank analyzed with each preparation batch? 2. Absolute value should not exceed MDL.	x			1. Yes, aqs – 460-71129/9. Soils –460- 72402/1-A , 460-72785/1-A, 460-72493/1-A, and 460-72822/1/A 2. Yes, all blanks were less than MDL.
Eh and pH data .	x			
Eh and pH data was included and plotted for all samples?	x			
Soluble Matrix Spike Data Included in Lab Package?	x			460-25550-23 (EF-B19-22.5) and 460-25550-29 (EF-B22-22.5)
1. %R criteria met? (75-125%R). 2. Was the spike concentration 40 mg/Kg? 3. Was a sample spiked at the frequency of 1/batch or 20 samples?	x	x*		1. No, batch 72611 = 14% and reanalysis batch 72859 = 13% batch 72980 = 23% and reanalysis batch 73000 = 28%. 2. No, batches 72611 and 72859 = 76.5 mg/kg; batches 72980 and 73000 = 55.6 mg/kg. 3. Yes for all batches.
Insoluble Matrix Spike Data Included in Lab Package?	x			460-25550-23 (EF-B19-22.5) and 460-25550-29 (EF-B22-22.5)
1. %R criteria met? (75-125%R). 2. Was the spike concentration 400 to 800 mg/Kg? 3. Was a sample spiked at the frequency of 1/batch or 20 samples?	x	x*		1. No, batch 72611 = 30% and reanalysis batch 72859 = 42% batch 72980 = 51% and reanalysis batch 73000 = 53%. 2. No, batches 72611 and 72859 = 1350 mg/kg; batches 72980 and 73000 = 984 mg/kg. 3. Yes for all batches.
Post Digestion Spike	x			460-25550-23 (EF-B19-22.5) and 460-25550-29 (EF-B22-22.5)
1. %R criteria met? (85-115%R). 2. Was the spike concentration 40 mg/Kg or twice the sample concentration? 3. Was a sample spiked at the frequency of 1/batch or 20 samples?	x	x*		1. No, batch 72611 = 76.5% and reanalysis batch 72859 = 70%. Batch 72492 = 79% and reanalysis batch 72716 = 85%, which did meet criteria. 2. Yes, samples were spiked greater than 2x sample concentration. 3. Yes for all batches.
Sample Duplicate Data Included in Lab Package?	x			460-25550-23 (EF-B19-22.5) and 460-25550-29 (EF-B22-22.5)
1. RPD criteria met? (RPD < 20%) of both results are ≥4x RL or control limit of ±RL if both results are <4x RL. 2.. Was a sample spiked at the frequency of 1/batch or 20 samples?	x			1. The RPDs for all hexavalent results were NC due to nondetect results for both the original and duplicate samples for all analyses in this SDG.
Was a Laboratory Control Sample (LCS) Included in Lab Package?	x			
1. %R criteria met? (80-120%R). 2. Was an LCS analyzed at the frequency of 1/batch or 20 samples?	x			1. Yes 2. Yes

Miscellaneous Items.

ITEM	YES	NO	N/A	COMMENTS
1. For soils by 7196A, was the pH within a range of 7.0-8.0? 2. For soils by 7199, was the pH within a range of 9.0-9.5? 3. For aqueous by 7196A, was the pH with a range of 1.5-2,5? 4. For soils (3060A), was the digestion temperature 90-95°C for at least 60 minutes? 5. For 7199, was each sample injected twice and was the RPD ≤20?	x			1. Yes 2. NA 3. Yes 4. Yes 5. NA

Holding Times

Sample ID	Method	Days from Sampling to Prep	Days from Prep to Analysis	Days from Sampling to Analysis	Sampling to Prep Status	Prep to Analysis Status	Sampling to Analysis Status
EB-041911	SW7196			1			OK @1 days
EF-B17-0.5	SW7196	14	2	16	OK @30 days	OK @7 days	OK @37 days
EF-B17-0.5	SW7196	16	4	20	OK @30 days	OK @7 days	OK @37 days
EF-B17-2.0	SW7196	14	2	16	OK @30 days	OK @7 days	OK @37 days
EF-B17-2.0	SW7196	16	4	20	OK @30 days	OK @7 days	OK @37 days
EF-B17-4.0	SW7196	14	2	16	OK @30 days	OK @7 days	OK @37 days
EF-B17-4.0	SW7196	16	4	20	OK @30 days	OK @7 days	OK @37 days
EF-B19-0.8	SW7196	14	2	16	OK @30 days	OK @7 days	OK @37 days
EF-B19-0.8	SW7196	16	4	20	OK @30 days	OK @7 days	OK @37 days
EF-B19-10.0	SW7196	13	2	15	OK @30 days	OK @7 days	OK @37 days
EF-B19-10.0	SW7196	16	1	17	OK @30 days	OK @7 days	OK @37 days
EF-B19-15.0	SW7196	13	2	15	OK @30 days	OK @7 days	OK @37 days
EF-B19-15.0	SW7196	16	1	17	OK @30 days	OK @7 days	OK @37 days
EF-B19-15.0X	SW7196	13	2	15	OK @30 days	OK @7 days	OK @37 days
EF-B19-15.0X	SW7196	16	1	17	OK @30 days	OK @7 days	OK @37 days
EF-B19-2.0	SW7196	14	2	16	OK @30 days	OK @7 days	OK @37 days
EF-B19-2.0	SW7196	16	4	20	OK @30 days	OK @7 days	OK @37 days
EF-B19-22.5	SW7196	13	2	15	OK @30 days	OK @7 days	OK @37 days
EF-B19-22.5	SW7196	16	1	17	OK @30 days	OK @7 days	OK @37 days
EF-B19-4.0	SW7196	14	2	16	OK @30 days	OK @7 days	OK @37 days
EF-B19-4.0	SW7196	16	4	20	OK @30 days	OK @7 days	OK @37 days
EF-B19-6.0	SW7196	13	2	15	OK @30 days	OK @7 days	OK @37 days
EF-B19-6.0	SW7196	16	1	17	OK @30 days	OK @7 days	OK @37 days
EF-B20-10.0	SW7196	13	2	15	OK @30 days	OK @7 days	OK @37 days
EF-B20-10.0	SW7196	16	1	17	OK @30 days	OK @7 days	OK @37 days
EF-B20-12.0	SW7196	13	2	15	OK @30 days	OK @7 days	OK @37 days
EF-B20-12.0	SW7196	16	1	17	OK @30 days	OK @7 days	OK @37 days
EF-B20-15.0	SW7196	13	2	15	OK @30 days	OK @7 days	OK @37 days
EF-B20-15.0	SW7196	16	1	17	OK @30 days	OK @7 days	OK @37 days
EF-B20-22.0	SW7196	13	2	15	OK @30 days	OK @7 days	OK @37 days
EF-B20-22.0	SW7196	16	1	17	OK @30 days	OK @7 days	OK @37 days
EF-B20-6.0	SW7196	13	2	15	OK @30 days	OK @7 days	OK @37 days
EF-B20-6.0	SW7196	16	1	17	OK @30 days	OK @7 days	OK @37 days
EF-B21-10.0	SW7196	13	2	15	OK @30 days	OK @7 days	OK @37 days
EF-B21-10.0	SW7196	16	1	17	OK @30 days	OK @7 days	OK @37 days
EF-B21-12.0	SW7196	13	2	15	OK @30 days	OK @7 days	OK @37 days

Sample ID	Method	Days from Sampling to Prep	Days from Prep to Analysis	Days from Sampling to Analysis	Sampling to Prep Status	Prep to Analysis Status	Sampling to Analysis Status
EF-B21-12.0	SW7196	16	1	17	OK @30 days	OK @7 days	OK @37 days
EF-B21-16.0	SW7196	13	2	15	OK @30 days	OK @7 days	OK @37 days
EF-B21-16.0	SW7196	16	1	17	OK @30 days	OK @7 days	OK @37 days
EF-B21-22.5	SW7196	13	2	15	OK @30 days	OK @7 days	OK @37 days
EF-B21-22.5	SW7196	16	1	17	OK @30 days	OK @7 days	OK @37 days
EF-B21-6.0	SW7196	13	2	15	OK @30 days	OK @7 days	OK @37 days
EF-B21-6.0	SW7196	16	1	17	OK @30 days	OK @7 days	OK @37 days
EF-B22-0.5	SW7196	14	2	16	OK @30 days	OK @7 days	OK @37 days
EF-B22-0.5	SW7196	16	4	20	OK @30 days	OK @7 days	OK @37 days
EF-B22-10.0	SW7196	13	2	15	OK @30 days	OK @7 days	OK @37 days
EF-B22-10.0	SW7196	16	1	17	OK @30 days	OK @7 days	OK @37 days
EF-B22-12.0	SW7196	13	2	15	OK @30 days	OK @7 days	OK @37 days
EF-B22-12.0	SW7196	16	1	17	OK @30 days	OK @7 days	OK @37 days
EF-B22-17.5	SW7196	13	2	15	OK @30 days	OK @7 days	OK @37 days
EF-B22-17.5	SW7196	16	1	17	OK @30 days	OK @7 days	OK @37 days
EF-B22-17.5X	SW7196	13	2	15	OK @30 days	OK @7 days	OK @37 days
EF-B22-17.5X	SW7196	16	1	17	OK @30 days	OK @7 days	OK @37 days
EF-B22-2.0	SW7196	14	2	16	OK @30 days	OK @7 days	OK @37 days
EF-B22-2.0	SW7196	16	4	20	OK @30 days	OK @7 days	OK @37 days
EF-B22-22.5	SW7196	14	2	16	OK @30 days	OK @7 days	OK @37 days
EF-B22-22.5	SW7196	16	4	20	OK @30 days	OK @7 days	OK @37 days
EF-B22-4.0	SW7196	14	2	16	OK @30 days	OK @7 days	OK @37 days
EF-B22-4.0	SW7196	16	4	20	OK @30 days	OK @7 days	OK @37 days
EF-B22-5.5	SW7196	13	2	15	OK @30 days	OK @7 days	OK @37 days
EF-B22-5.5	SW7196	16	1	17	OK @30 days	OK @7 days	OK @37 days
EF-B31-0.5	SW7196	14	2	16	OK @30 days	OK @7 days	OK @37 days
EF-B31-0.5	SW7196	16	4	20	OK @30 days	OK @7 days	OK @37 days
EF-B31-2.0	SW7196	14	2	16	OK @30 days	OK @7 days	OK @37 days
EF-B31-2.0	SW7196	16	4	20	OK @30 days	OK @7 days	OK @37 days
EF-B31-4.0	SW7196	14	2	16	OK @30 days	OK @7 days	OK @37 days
EF-B31-4.0	SW7196	16	4	20	OK @30 days	OK @7 days	OK @37 days

AECOM

SDG#: 460-25550	x - concentration	y - response
Cr+6 ICAL -04/29/11	0	0
Soils	50	0.043
(p. 1516 of data pkg)	100	0.087
	500	0.399
	750	0.598
	1250	0.992

				(p. 1516 of data pkg)
AECOM Calculated Intercept	-4.682	OK	Reported intercept	-4.682
AECOM Slope	1264	OK	Reported Slope	1264
AECOM Calculated r	1.000	OK	Reported r	1.000

EF-B19-22.5 (460-25550-23)	**(p. 1546 of data pkg)**			
Background reading	0.07			
Total absorbance	0.075			
Total absorbance - background	0.005			
Instrument Response (µg/L)	1.638			
Sample weight (g)	2.5			
Final Volume (mL)	100			
Percent solids	0.523			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.1	OK sample ND	Reported Result (mg/Kg)	3.8 U

LCS calculation	**LCSS 460-72402/2-A pg. 1546**			
LCS Soluble Instrument Response	0.484			
Instrument Concentration (ug/L)	607.020			
Sample weight	2.5			
Percent solids	1			
Dilution Factor	1			
AECOM Calculated LCS Result (mg/Kg)	24.28	OK rounding	Reported Result (mg/Kg)	24.28

%R = Found/True*100				
True Value (mg/kg)	25.4			
AECOM Calculated %R	95.6	OK rounding	Reported %R	96

MS calculation	**p. 1546 460-25550-23 MSS (EF-B19-22.5)**			
MS Insoluble Instrument Response	0.115			
Instrument Concentration (ug/L)	140.661			
Sample weight (g)	2.5			
Percent solids	0.523			
Dilution Factor	1			
AECOM Calculated MS Result (mg/Kg)	10.76	OK rounding	Reported Result (mg/Kg)	10.77

%R = Found/True*100	**pg. 1437**			
True Value (mg/kg)	76.5			
Native concentration (g)	0			
%R	14.1	OK rounding	Reported %R	14

Percent Solids	**pg. 1720 sample ID EF-B19-22.5 (460-25550-23)**			
Empty dish weight=	1			
Wet weight=	7.18			
Dry weight=	4.23			
AECOM%solids =	52.3	OK	TestAmerica reported %solids=	52.3

EF-B19-22.5 (460-25550-23)	**pg. 1563**			
Low Standard	50			
Initial weight (g)	2.5			
Final volume (mL)	100			
Percent solids	0.52			
Dilution Factor	1.00			
Reporting Limit	3.8	OK	Reported RL (mg/Kg)=	3.8

EF-B21-6.0 (460-25550-1)	**p. 1546 of data pkg**			
Background reading	0.004			
Total absorbance	0.009			
Total absorbance - background	0.005			
Instrument Response (µg/L)	1.638			
Sample weight (g)	2.5			
Final Volume (mL)	100			
Percent solids	0.802			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.1	OK sample ND	Reported Result (mg/Kg)	2.5 U

EF-B21-10.0 (460-25550-3)	**p. 1546 of data pkg**			
Background reading	0.001			
Total absorbance	0.003			
Total absorbance - background	0.002			
Instrument Response (µg/L)	-2.154			
Sample weight (g)	2.51			
Final Volume (mL)	100			
Percent solids	81.3			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.0	OK sample ND	Reported Result (mg/Kg)	2.5 U

EF-B21-12.0 (460-25550-4)	**p. 1546 of data pkg**			
Background reading	0.001			
Total absorbance	0.032			
Total absorbance - background	0.031			
Instrument Response (µg/L)	34.498			
Sample weight (g)	2.53			
Final Volume (mL)	100			
Percent solids	0.819			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	1.7	OK	Reported Result (mg/Kg)	1.7 J

EF-B21-16.0 (460-25550-6)	**p. 1546 of data pkg**			
Background reading	0			
Total absorbance	0.002			
Total absorbance - background	0.002			
Instrument Response (µg/L)	-2.154			
Sample weight (g)	2.48			
Final Volume (mL)	100			
Percent solids	0.834			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	-0.1	OK sample ND	Reported Result (mg/Kg)	2.4 U

EF-B21-22.5 (460-25550-8)	**p. 1546 of data pkg**			
Background reading	0			
Total absorbance	0.001			
Total absorbance - background	0.001			
Instrument Response (µg/L)	-3.418			
Sample weight (g)	2.53			
Final Volume (mL)	100			
Percent solids	0.794			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	-0.2	OK sample ND	Reported Result (mg/Kg)	2.5 U

EF-B20-6.0 (460-25550-9)	**p. 1546 of data pkg**			
Background reading	0			
Total absorbance	0			
Total absorbance - background	0			
Instrument Response (µg/L)	-4.682			
Sample weight (g)	2.48			
Final Volume (mL)	100			
Percent solids	0.852			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	-0.22	OK sample ND	Reported Result (mg/Kg)	2.4 U

EF-B20-10.0 (460-25550-11)	**p. 1546 of data pkg**			
Background reading	0			
Total absorbance	0			
Total absorbance - background	0			
Instrument Response (µg/L)	-4.682			
Sample weight (g)	2.49			
Final Volume (mL)	100			
Percent solids	0.847			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	-0.2	OK sample ND	Reported Result (mg/Kg)	2.4 U

EF-B20-12.0 (460-25550-12)	**p. 1546 of data pkg**			
Background reading	0			
Total absorbance	0			
Total absorbance - background	0			
Instrument Response (µg/L)	-4.682			
Sample weight (g)	2.54			
Final Volume (mL)	100			
Percent solids	82			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.0	OK sample ND	Reported Result (mg/Kg)	2.4 U

EF-B20-15.0 (460-25550-13)	**p. 1546 of data pkg**			
Background reading	0.004			
Total absorbance	0.01			
Total absorbance - background	0.006			
Instrument Response (µg/L)	2.901			
Sample weight (g)	2.56			
Final Volume (mL)	100			
Percent solids	0.829			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.1	OK sample ND	Reported Result (mg/Kg)	2.4 U

EF-B20-10.0 (460-25550-15)	**p. 1547 of data pkg**			
Background reading	0			
Total absorbance	0.001			
Total absorbance - background	0.001			
Instrument Response (µg/L)	-3.418			
Sample weight (g)	2.49			
Final Volume (mL)	100			
Percent solids	0.76			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	-0.2	OK sample ND	Reported Result (mg/Kg)	2.6 U

EF-B19-6.0 (460-25550-16)	**p. 1547 of data pkg**			
Background reading	0			
Total absorbance	0.001			
Total absorbance - background	0.001			
Instrument Response (µg/L)	-3.418			
Sample weight (g)	2.54			
Final Volume (mL)	100			
Percent solids	0.831			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0	OK sample ND	Reported Result (mg/Kg)	2.4 U

EF-B19-10.0 (460-25550-17)	**p. 1547 of data pkg**			
Background reading	0			
Total absorbance	0			
Total absorbance - background	0			
Instrument Response (µg/L)	-4.682			
Sample weight (g)	2.51			
Final Volume (mL)	100			
Percent solids	0.834			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0	OK sample ND	Reported Result (mg/Kg)	2.4 U

EF-B19-15.0 (460-25550-19)	**p. 1547 of data pkg**			
Background reading	0			
Total absorbance	0.001			
Total absorbance - background	0.001			
Instrument Response (µg/L)	-3.418			
Sample weight (g)	2.48			
Final Volume (mL)	100			
Percent solids	0.848			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	-0.2	OK sammple ND	Reported Result (mg/Kg)	2.4 U

EF-B19-15.0X (460-25550-20)	**p. 1547 of data pkg**			
Background reading	0			
Total absorbance	0.004			
Total absorbance - background	0.004			
Instrument Response (µg/L)	0.374			
Sample weight (g)	2.51			
Final Volume (mL)	100			
Percent solids	84			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.0	OK sample ND	Reported Result (mg/Kg)	2.4 U

EF-B22-5.5 (460-25550-24)	**p. 1547 of data pkg**			
Background reading	0			
Total absorbance	0.004			
Total absorbance - background	0.004			
Instrument Response (µg/L)	0.374			
Sample weight (g)	2.55			
Final Volume (mL)	100			
Percent solids	0.765			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.0	OK sample ND	Reported Result (mg/Kg)	2.6 U

EF-B22-10.0 (460-25550-25)	**p. 1547 of data pkg**			
Background reading	0.007			
Total absorbance	0.013			
Total absorbance - background	0.006			
Instrument Response (µg/L)	2.901			
Sample weight (g)	2.52			
Final Volume (mL)	100			
Percent solids	0.829			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.1	OK sample ND	Reported Result (mg/Kg)	2.4 U

EF-B22-12.0 (460-25550-26)	**p. 1547 of data pkg**			
Background reading	0			
Total absorbance	0.007			
Total absorbance - background	0.007			
Instrument Response (µg/L)	4.165			
Sample weight (g)	2.47			
Final Volume (mL)	100			
Percent solids	0.833			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.2	OK sample ND	Reported Result (mg/Kg)	2.4 U

EF-B22-17.5 (460-25550-27)	**p. 1547 of data pkg**			
Background reading	0.269			
Total absorbance	0.242			
Total absorbance - background	-0.027			
Instrument Response (µg/L)	0.004			
Sample weight (g)	2.55			
Final Volume (mL)	100			
Percent solids	0.308			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.0	Estimated J due to % solids < 50%	Reported Result (mg/Kg)	6.4

EF-B22-17.5X (460-25550-28)	**p. 1547 of data pkg**			
Background reading	0.368			
Total absorbance	0.323			
Total absorbance - background	-0.045			
Instrument Response (µg/L)	-61.555			
Sample weight (g)	2.47			
Final Volume (mL)	100			
Percent solids	0.321			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	-7.8	Estimated J due to % solids < 50%	Reported Result (mg/Kg)	6.3

AECOM

	x - concentration	y - response
SDG#: 460-25550		
Batch 73000		
Cr+6 ICAL -05/09/11	0	0
Soils	50	0.042
(p. 1531 of data pkg)	100	0.084
	500	0.396
	750	0.597
	1250	0.991

				(p. 1692 of data pkg)
AECOM Calculated Intercept	-2.737	OK	Reported intercept	-2.737
AECOM Slope	1264	OK	Reported Slope	1264
AECOM Calculated r	0.99999	OK rounding	Reported r	1.000

EF-B22-22.5 (460-25550-29)	**(p. 1557 of data pkg)**			
Background reading	0.025			
Total absorbance	0.026			
Total absorbance - background	0.001			
Instrument Response (µg/L)	-1.473			
Sample weight (g)	2.5			
Final Volume (mL)	100			
Percent solids	0.72			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	-0.1	OK sample ND	Reported Result (mg/Kg)	2.8 U

LCS calculation	**LCSS 460-72822/2-A pg. 1557**			
LCS Soluble Instrument Response	0.477			
Instrument Concentration (ug/L)	600.051			
Sample weight	2.5			
Percent solids	1			
Dilution Factor	1			
AECOM Calculated LCS Result (mg/Kg)	24.00	OK	Reported Result (mg/Kg)	24.01

%R = Found/True*100				
True Value (mg/kg)	25.4			
AECOM Calculated %R	94.5	OK rounding	Reported %R	95

MS calculation	**p. 1557 460-25550-29 MSS (EF-B22-22.5)**			
MS soluble Instrument Response	0.222			
Instrument Concentration (ug/L)	277.806			
Sample weight (g)	2.5			
Percent solids	0.72			
Dilution Factor	1			
AECOM Calculated MS Result (mg/Kg)	15.43	OK rounding	Reported Result (mg/Kg)	15.31

%R = Found/True*100	**pg. 1613**			
True Value (mg/kg)	55.6			
Native concentration (g)	0			
%R	27.8	OK rounding	Reported %R	28

Percent Solids	**pg. 1563 sample ID EF-B22-22.5 (460-25550-29)**			
Empty dish weight=	1			
Wet weight=	7.74			
Dry weight=	5.85			
AECOM%solids =	72.0	OK	TestAmerica reported %solids=	72.0

EF-B22-22.5 (460-25550-29)	**pg. 1563**			
Low Standard	50			
Initial weight (g)	2.5			
Final volume (mL)	100			
Percent solids	0.72			
Dilution Factor	1.00			
Reporting Limit	2.8	OK	Reported RL (mg/Kg)=	2.8

EF-B19-0.8 (460-25550-31)	**pg. 1557**			
Background reading	0.016			
Total absorbance	0.019			
Total absorbance - background	0.003			
Instrument Response (µg/L)	1.054			
Sample weight (g)	2.48			
Final Volume (mL)	100			
Percent solids	0.894			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.0	OK sample ND	Reported Result (mg/Kg)	2.3 U

EF-B19-2.0 (460-25550-32)	**pg. 1557**			
Background reading	0			
Total absorbance	0.004			
Total absorbance - background	0.004			
Instrument Response (µg/L)	2.318			
Sample weight (g)	2.52			
Final Volume (mL)	100			
Percent solids	0.86			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.1	OK sample ND	Reported Result (mg/Kg)	2.3 U

EF-B19-4.0 (460-25550-34)	**pg. 1557**			
Background reading	0.002			
Total absorbance	0.05			
Total absorbance - background	0.048			
Instrument Response (µg/L)	57.921			
Sample weight (g)	2.51			
Final Volume (mL)	100			
Percent solids	0.823			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	2.8	OK	Reported Result (mg/Kg)	2.8

EF-B22-0.5 (460-25550-35)	**pg. 1557**			
Background reading	0.008			
Total absorbance	0.01			
Total absorbance - background	0.002			
Instrument Response (µg/L)	-0.210			
Sample weight (g)	2.48			
Final Volume (mL)	100			
Percent solids	0.875			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.0	OK sample ND	Reported Result (mg/Kg)	2.3 U

EF-B22-2.0 (460-25550-36)	**pg. 1557**			
Background reading	0.007			
Total absorbance	0.009			
Total absorbance - background	0.002			
Instrument Response (µg/L)	-0.210			
Sample weight (g)	2.49			
Final Volume (mL)	100			
Percent solids	0.838			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.0	OK sample ND	Reported Result (mg/Kg)	2.4 U

EF-B22-4.0 (460-25550-38)	**pg. 1557**			
Background reading	0.001			
Total absorbance	0.011			
Total absorbance - background	0.01			
Instrument Response (µg/L)	9.900			
Sample weight (g)	2.57			
Final Volume (mL)	100			
Percent solids	0.882			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.4	OK rounding	Reported Result (mg/Kg)	2.2 U

EF-B17-0.5 (460-25550-39)	**pg. 1557**			
Background reading	0.041			
Total absorbance	0.096			
Total absorbance - background	0.055			
Instrument Response (µg/L)	66.767			
Sample weight (g)	2.48			
Final Volume (mL)	100			
Percent solids	0.833			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	3.2	OK	Reported Result (mg/Kg)	3.2

EF-B17-2.0 (460-25550-40)	**pg. 1557**			
Background reading	0.002			
Total absorbance	0.17			
Total absorbance - background	0.168			
Instrument Response (µg/L)	209.566			
Sample weight (g)	2.53			
Final Volume (mL)	100			
Percent solids	0.826			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	10.0	OK	Reported Result (mg/Kg)	10.0

EF-B17-4.0 (460-25550-42)	**pg. 1557**			
Background reading	0.005			
Total absorbance	0.054			
Total absorbance - background	0.049			
Instrument Response (µg/L)	59.185			
Sample weight (g)	2.55			
Final Volume (mL)	100			
Percent solids	0.783			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	3.0	OK	Reported Result (mg/Kg)	3.0

EF-B31-0.5 (460-25550-43)	**pg. 1557**			
Background reading	0			
Total absorbance	0			
Total absorbance - background	0			
Instrument Response (µg/L)	-2.737			
Sample weight (g)	2.54			
Final Volume (mL)	100			
Percent solids	0.93			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	-0.1	OK sample ND	Reported Result (mg/Kg)	2.1 U

EF-B31-2.0 (460-25550-44)	**pg. 1557**			
Background reading	0.005			
Total absorbance	0.512			
Total absorbance - background	0.507			
Instrument Response (µg/L)	637.963			
Sample weight (g)	2.51			
Final Volume (mL)	100			
Percent solids	0.792			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	32.1	OK	Reported Result (mg/Kg)	32.1

EF-B31-4.0 (460-25550-46)	**pg. 1557**			
Background reading	0			
Total absorbance	0.501			
Total absorbance - background	0.501			
Instrument Response (µg/L)	630.380			
Sample weight (g)	2.51			
Final Volume (mL)	100			
Percent solids	0.693			
Dilution Factor	5			
AECOM Calculated Result (mg/Kg)	181.2	OK rounding	Reported Result (mg/Kg)	181.0

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Data Validation Report

Project:	PPG-GA EF
Laboratory:	TestAmerica, NJ
Laboratory Job No.:	460-29852
Analysis/Method:	Hexavalent Chromium SW846 3060A/7196A (including pH and Eh) Total Nickel SW846 3010A/3050B/6010/B/6020
Validation Level:	Full (Hexavalent Chromium) Limited (Total Nickel)
Site Location/Address:	Garfield Avenue Soil RI, Site 114, Jersey City, NJ
AECOM Project Number:	60154801-0007

Prepared by: Justin Webster/AECOM	Completed on: September 1, 2011
Reviewed by: Lisa Krowitz/AECOM	File Name: 2011-08-31 Hex Cr Ni DV Report 460-29852-F.docx

Introduction

The results of quality control data analyzed with site samples were used to assess the overall reliability of the data. The following qualifiers were used to identify data quality issues:

U: Indicates the analyte was not detected in the sample above the sample reporting limit.

J: Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

UJ: Indicates the analyte was not detected above the reporting limit and the reporting limit was approximate.

R: The sample result was rejected due to serious deficiencies; the presence or absence of the analyte could not be confirmed.

Sample Information

The samples listed below were collected by AECOM on August 11, 2011 as part of the Garfield Avenue Soil RI sampling task at PPG Site 114, Jersey City, New Jersey.

Field ID	Laboratory ID	Matrix	Fraction
EF-B87-4.2	460-29852-1	Soil	Hexavalent Chromium
EF-B87-6.0	460-29852-2	Soil	Hexavalent Chromium
EF-B87-10.0	460-29852-3	Soil	Hexavalent Chromium
EF-B87-12.0	460-29852-4	Soil	Hexavalent Chromium
EF-B87-15.0	460-29852-5	Soil	Hexavalent Chromium
EF-B87-20.0	460-29852-6	Soil	Hexavalent Chromium
EF-B87-22.0	460-29852-7	Soil	Hexavalent Chromium
EF-B86-6.0	460-29852-8	Soil	Hexavalent Chromium
EF-B86-8.0	460-29852-9	Soil	Hexavalent Chromium
EF-B86-10.0	460-29852-10	Soil	Hexavalent Chromium
EF-B86-12.0	460-29852-11	Soil	Hexavalent Chromium
EF-B86-15.0	460-29852-12	Soil	Hexavalent Chromium
EF-B86-16.0	460-29852-13	Soil	Hexavalent Chromium
EF-B86-20.0	460-29852-14	Soil	Hexavalent Chromium
EF-B86-22.0	460-29852-15	Soil	Hexavalent Chromium
EF-B97-2.5	460-29852-16	Soil	Total Nickel
EF-B98-2.5	460-29852-17	Soil	Total Nickel
EB081111 (field blank)	460-29852-18	Aqueous	Hexavalent Chromium/Total Nickel
EF-B87-10.0x (field duplicate)	460-29852-29	Soil	Hexavalent Chromium

The samples were collected following the procedures detailed in the NJDEP - Approved Remedial Investigation Work Plan – Soil Non-Residential Chromate Chemical Production Waste Sites 114, 132, 133, 135, 137, 143, and 186 (March 2011).

General Comments

The data package was complete. Quality control (QC) issues identified during validation are discussed below. Refer to the Soil Target Analyte Summary Hit List for a listing of all detected results, qualified results, and associated qualifications, where applicable.

The reporting limit for the nondetect hexavalent chromium result of 27.3 mg/kg exceeded the NJEDP non-residential direct contact soil remediation standard of 20 mg/kg. The reporting limit was elevated above the standard due to the high moisture content present in the soil sample.

Hexavalent Chromium

Matrix Spike Results

Soil sample EF-B86-6.0 was selected for soluble and insoluble matrix spike analysis. The initial analysis (batch 83932) soluble and insoluble matrix spike recoveries were 74% and 95%, respectively, which the soluble MS did not meet quality control criteria of 75-125%R. The post spike result for the initial analysis (83932) was recovered at 97%, which met the criteria of 85-115%R. Since the initial soluble spike recovery did not meet acceptable criteria, the laboratory performed a re-extraction and re-analysis for all samples associated with this initial batch 83932 under batch 84094.

The re-analysis (batch 84094) soluble and insoluble matrix spike recoveries were 74% and 96%, respectively. Thus, the soluble MS did not meet the quality control criteria of 75-125%R upon reanalysis. The post spike result for the re-analysis (84094) was recovered at 107%, which met the quality control criteria of 85-115%R.

Since the re-analysis soluble matrix spike also failed to meet quality control criteria, additional parameters were analyzed to determine if possible matrix interferences could be the cause for the poor

matrix spike recoveries. The samples were tested for pH and oxidative reduction potential (ORP) and plotted on an Eh/pH phase diagram chart. From this chart, source sample EF-B86-6.0 for the matrix spike analyses was above the phase change line indicating oxidizing matrix conditions capable of supporting hexavalent chromium.

The hexavalent chromium results were reported from the initial analysis batch 83932 since the MS %R from the reanalysis showed no improvement and the initial matrix spike recoveries were above 50%R. All soil samples were qualified as estimated (J/UJ) due to the low MS %Rs.

Percent Moisture

Sample EF-B86-20.0 had moisture content that exceeded the quality control criteria of greater than 50% moisture. The nondetect result was qualified as estimated (UJ) due to the high percent moisture content.

Laboratory Duplicate Results

Sample EF-B86-6.0 was the laboratory duplicate sample associated with the samples in this data set. The relative percent differences (RPD) result was not calculated since the original and duplicate sample results were reported as nondetect. No data qualifications were required on this basis.

Field Duplicate Results

Sample EF-B87-10.0x was submitted as the field duplicate for sample EF-B87-10.0. The relative percent difference (RPD) was not calculated because the result for the original sample was reported as nondetect and the field duplicate sample was reported as an estimated value above the method reporting limit (MRL), but below the reporting limit (RL). The difference between the nondetect result and detected result was less than the RL; therefore, field duplicate precision was deemed acceptable.

Sample Reporting Limits

Samples EF-B86-22.0, EF-B86-6.0, EF-B87-10.0x, and EF-B87-4.2 were qualified “J” as estimated by the laboratory. The reported results were less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL) and; therefore, are approximate values.

Nickel

No data complications were observed in the data report: therefore, no data qualifications were required.

Data Quality and Recommendations

In general, these data appear to be valid and may be used for decision-making purposes. No data were rejected. Qualified results, if applicable, were discussed in Attachments A and B below.

Attachments

Attachment A Target Analyte Summary Hitlist(s)

Attachment B Data Validation Report Form

Attachment A

Target Analyte Summary Hitlist(s)

Soil Target Analyte Summary Hit List (Hexavalent Chromium)

Site Name PPG GAEF Site 114, Jersey City, NJ
Sampling Date August 11, 2011
Lab Name/ID TestAmerica, Edison, NJ
SDG No 460-29852
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID EB081111

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
EF-B86-10.0	460-29852-10	CHROMIUM (HEXAVALENT)	U	U	U	2.7	Qualify	20
EF-B86-12.0	460-29852-11	CHROMIUM (HEXAVALENT)	U	U	U	2.5	Qualify	20
EF-B86-15.0	460-29852-12	CHROMIUM (HEXAVALENT)	U	U	U	3.6	Qualify	20
EF-B86-16.0	460-29852-13	CHROMIUM (HEXAVALENT)	U	U	U	3.3	Qualify	20
EF-B86-20.0	460-29852-14	CHROMIUM (HEXAVALENT)	U	U	U	27.3	Qualify	20,22
EF-B86-22.0	460-29852-15	CHROMIUM (HEXAVALENT)	U	1.7	1.7	2.5	Qualify	13,18
EF-B86-6.0	460-29852-8	CHROMIUM (HEXAVALENT)	U	0.78	0.78	2.5	Qualify	13,18
EF-B86-8.0	460-29852-9	CHROMIUM (HEXAVALENT)	U	U	U	2.3	Qualify	20
EF-B87-10.0	460-29852-3	CHROMIUM (HEXAVALENT)	U	U	U	2.4	Qualify	20
EF-B87-10.0X	460-29852-19	CHROMIUM (HEXAVALENT)	U	1.0	1.0	2.3	Qualify	13,18
EF-B87-12.0	460-29852-4	CHROMIUM (HEXAVALENT)	U	U	U	2.4	Qualify	20
EF-B87-15.0	460-29852-5	CHROMIUM (HEXAVALENT)	U	U	U	2.6	Qualify	20
EF-B87-20.0	460-29852-6	CHROMIUM (HEXAVALENT)	U	U	U	2.5	Qualify	20
EF-B87-22.0	460-29852-7	CHROMIUM (HEXAVALENT)	U	U	U	2.4	Qualify	20
EF-B87-4.2	460-29852-1	CHROMIUM (HEXAVALENT)	U	0.94	0.94	2.3	Qualify	13,18

Note: A “U” under Method Blank column indicates a nondetect result.
A “U” under the Laboratory Sample Result and Validation Sample Result columns indicate a nondetect result at the RL.

NJDEP Validation Footnote

13. The reported analyte was qualified (J) because the sample result was greater than the MDL and less than the RL.

18. The reported value was qualified (J) as estimated because the predigestion spike recovery was less than 75 percent.

20. The nondetect value was qualified (UJ) because the predigestion spike recovery was less than 75 percent. The possibility of false negative exists.

22. The reported value was qualified (UJ) because the sample moisture content exceeded 50 percent.

Soil Target Analyte Summary Hit List (Total Chromium)

Site Name PPG-GAEF Site 114, Jersey City, NJ
Sampling Date August 11, 2011
Lab Name/ID TestAmerica, Edison, NJ
SDG No 460-29852
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID EB081111

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
EF-B97-2.5	460-29852-16	NICKEL	U	17.1	17.1	8.3		
EF-B98-2.5	460-29852-17	NICKEL	U	27.4	27.4	8.0		

Note: A “U” under Method Blank column indicates a nondetect result.
A “U” under the Laboratory Sample Result and Validation Sample Result columns indicate a nondetect result at the RL.

Attachment B

Data Validation Report Form

Client Name: PPG Industries	**Project Number: 60154801-0007**
Site Location: PPG-GAEF	**Project Manager: Robert Cataldo**
Laboratory: TestAmerica, New Jersey	**Limited or Full Validation (circle one)**
Laboratory Job No: 460-29852	**Date Checked: 08/31/2011**
Validator: Justin Webster	**Peer: Lisa Krowitz**

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	x			17 Soils and 1 field blank
Reporting Limits met project requirements?		x		ND result for sample EF-B86-20.0 exceeded the NJDEP impact to non-residential standard at 27.3mg/kg
Field I.D. included?	x			
Laboratory I.D. included?	x			
Sample matrix included?	x			
Sample receipt temperature 2-6ºC?	x			3.9°C
Signed COCs included?	x			
Date of sample collection included?	x			8/11/2011
Date of sample digestion included?	x			8/22/11 and 8/24/11
Holding time to digestion met criteria? Soils -30 days from collection to digestion.	x			See Below " Holding Times"
Date of analysis included?	x			Aqs 8/12/11 @ 1003. Soils 08/23/11 and 8/24/11
Holding time to analysis met criteria? Soils -168 hours from digestion to analysis. Aqueous – 24 hours from collection to analysis.	x			See Below "Holding Times"
Method reference included?	x			3060A/7196A
Laboratory Case Narrative included?	x			

Definitions: MDL – Method Detection Limit; %R – Percent Recovery; RL – Reporting Limit; RPD – Relative Percent Difference; RSD – Relative Standard Deviation :Corr – Correlation Coefficient.

Comments

Field Duplicates:

EF-B87-10.0 (29852-3)	EF-B87-10.0x (29852-19)	% RPD
2.4 U nondetect	1.0 J estimated value	The RPD was not calculated since the original and dup results were nondetect.

Sample dilutions:
EF-B86-20.0(5x)

ITEM	YES	NO	N/A	COMMENTS
Initial Calibration Documentation Included in Lab Package?	x			Cal source (aqs WThcrIM2-00025) (soil WThcrIM 00027)
1. Blank plus 4 standards (7196A) or blank plus 3 standards (7199), 2. Correlation coefficient of ≥0.995 (7196A) or ≥0.999 (7199). 3. Calibrate daily or each time instrument is set up.	x			1. Each analysis 1 blank and 5 cal STDs 2. All analyses meet CC 3. Yes
Calibration Check Standard (CCS) for 7196A and Quality Control Sample (QCS) for 7199 Included in Lab Package?	x			Check source (aqs WThcrIM4-00025) (soils WThcrIM3 00013)
1. %R criteria met? (90 - 110%). 2. Correct frequency of once every 10 samples 3. CCS and QCS from independent source and at mid level of calibration curve.	x			1. All met %R 2. Analyzed every 10 samples 3. Yes
Calibration Blanks	x			Aqs – 460-82947/1 and Soils 460-83932/1 and 460-84094/1
1. Analyzed prior to initial calibration standards and after each CCS/QCS? 2. Absolute value should not exceed MDL.	x			1. Yes for all. 2. Yes, all calibration blanks for Aqs and Soils were < MDL
Method Blank and Field Blanks Included in Lab Package?	x			Field blank EB081111 was reported as nondetect.
1. Method blank analyzed with each preparation batch? 2. Absolute value should not exceed MDL.	x			1. Yes, aqs – 460-82947/9. Soils –460- 83891/1-A and 460-84047/1-A. 2. Yes, all MBs and field blank were < MDL.
Eh and pH data.	x			
Eh and pH data was included and plotted for all samples?	x			
Soluble Matrix Spike Data Included in Lab Package?	x			460-29852-8 (EF-B86-6.0)
1. %R criteria met? (75-125%R). 2. Was the spike concentration 40 mg/Kg? 3. Was a sample spiked at the frequency of 1/batch or 20 samples?	x	X*		1. No, initial batch 83932 = 74% and reanalysis batch 84084 = 74%. 2. Yes, batches 83932 and 84084 = 50.4 mg/kg 3. Yes
Insoluble Matrix Spike Data Included in Lab Package?	x			460-29852-8 (EF-B86-6.0)
1. %R criteria met? (75-125%R). 2. Was the spike concentration 400 to 800 mg/Kg? 3. Was a sample spiked at the frequency of 1/batch or 20 samples?	x			1. Yes, batch 83932 = 95% and reanalysis batch 84094 = 96%. 2. Yes, batches 83932 and 84094 = 892 mg/kg 3. Yes
Post Digestion Spike	x			460-29852-8 (EF-B86-6.0)
1. %R criteria met? (85-115%R). 2. Was the spike concentration 40 mg/Kg or twice the sample concentration? 3. Was a sample spiked at the frequency of 1/batch or 20 samples?	x			1. Yes, batch 83932 = 97% and reanalysis batch 84094 = 107%. 2. Yes, batches 83932 and 84094 = 50.4 mg/kg. 3. Yes
Sample Duplicate Data Included in Lab Package?	x			460-29852-8 (EF-B86-6.0)
1. RPD criteria met? (RPD < 20%) of both results are ≥4x RL or control limit of ±RL if both results are <4x RL. 2.. Was a sample spiked at the frequency of 1/batch or 20 samples?	x			1. The RPD for batch 83932 was not calculated due to an estimated result for the original analysis and a nondetect result for the duplicate analysis. No data qualifications were required. The RPD for batch 84094 was not calculated since both the original and duplicate results were reported as nondetect.
Was a Laboratory Control Sample (LCS) Included in Lab Package?	x			
1. %R criteria met? (80-120%R). 2. Was an LCS analyzed at the frequency of 1/batch or 20 samples?	x			1. Yes 2. Yes
Miscellaneous Items.				
1. For soils by 7196A, was the pH within a range of 7.0-8.0? 2. For soils by 7199, was the pH within a range of 9.0-9.5? 3. For aqueous by 7196A, was the pH with a range of 1.5-2,5? 4. For soils (3060A), was the digestion temperature 90-95°C for at least 60 minutes? 5. For 7199, was each sample injected twice and was the RPD ≤20?	x			1. Yes 2. NA 3. Yes 4. Yes 5. NA

Holding Times

Sample ID	Method	Days from Sampling to Prep	Days from Prep to Analysis	Days from Sampling to Analysis	Sampling to Prep Status	Prep to Analysis Status	Sampling to Analysis Status
EB081111	SW7196			1			OK @1 days
EF-B86-10.0	SW7196	11	1	12	OK @30 days	OK @7 days	OK @37 days
EF-B86-10.0	SW7196	13	0	13	OK @30 days	OK @7 days	OK @37 days
EF-B86-12.0	SW7196	11	1	12	OK @30 days	OK @7 days	OK @37 days
EF-B86-12.0	SW7196	13	0	13	OK @30 days	OK @7 days	OK @37 days
EF-B86-15.0	SW7196	11	1	12	OK @30 days	OK @7 days	OK @37 days
EF-B86-15.0	SW7196	13	0	13	OK @30 days	OK @7 days	OK @37 days
EF-B86-16.0	SW7196	11	1	12	OK @30 days	OK @7 days	OK @37 days
EF-B86-16.0	SW7196	13	0	13	OK @30 days	OK @7 days	OK @37 days
EF-B86-20.0	SW7196	11	1	12	OK @30 days	OK @7 days	OK @37 days
EF-B86-20.0	SW7196	13	0	13	OK @30 days	OK @7 days	OK @37 days
EF-B86-22.0	SW7196	11	1	12	OK @30 days	OK @7 days	OK @37 days
EF-B86-22.0	SW7196	13	0	13	OK @30 days	OK @7 days	OK @37 days
EF-B86-6.0	SW7196	11	1	12	OK @30 days	OK @7 days	OK @37 days
EF-B86-6.0	SW7196	13	0	13	OK @30 days	OK @7 days	OK @37 days
EF-B86-8.0	SW7196	11	1	12	OK @30 days	OK @7 days	OK @37 days
EF-B86-8.0	SW7196	13	0	13	OK @30 days	OK @7 days	OK @37 days
EF-B87-10.0	SW7196	11	1	12	OK @30 days	OK @7 days	OK @37 days
EF-B87-10.0	SW7196	13	0	13	OK @30 days	OK @7 days	OK @37 days
EF-B87-10.0X	SW7196	11	1	12	OK @30 days	OK @7 days	OK @37 days
EF-B87-10.0X	SW7196	13	0	13	OK @30 days	OK @7 days	OK @37 days
EF-B87-12.0	SW7196	11	1	12	OK @30 days	OK @7 days	OK @37 days
EF-B87-12.0	SW7196	13	0	13	OK @30 days	OK @7 days	OK @37 days
EF-B87-15.0	SW7196	11	1	12	OK @30 days	OK @7 days	OK @37 days
EF-B87-15.0	SW7196	13	0	13	OK @30 days	OK @7 days	OK @37 days
EF-B87-20.0	SW7196	11	1	12	OK @30 days	OK @7 days	OK @37 days
EF-B87-20.0	SW7196	13	0	13	OK @30 days	OK @7 days	OK @37 days
EF-B87-22.0	SW7196	11	1	12	OK @30 days	OK @7 days	OK @37 days
EF-B87-22.0	SW7196	13	0	13	OK @30 days	OK @7 days	OK @37 days
EF-B87-4.2	SW7196	11	1	12	OK @30 days	OK @7 days	OK @37 days
EF-B87-4.2	SW7196	13	0	13	OK @30 days	OK @7 days	OK @37 days
EF-B87-6.0	SW7196	11	1	12	OK @30 days	OK @7 days	OK @37 days
EF-B87-6.0	SW7196	13	0	13	OK @30 days	OK @7 days	OK @37 days

AECOM

SDG#: 460-29852
Batch 83932
Cr+6 ICAL - 08/23/11
Soils
(p. 442 of data pkg)

x - concentration	y - response
0	0
50	0.046
100	0.088
500	0.404
750	0.612
1250	1.007

				(p. 442 of data pkg)
AECOM Calculated Intercept	-5.601	OK	Reported intercept	1.696
AECOM Slope	1244	OK	Reported Slope	1248
AECOM Calculated r	1.000	OK	Reported r	1.000

EF-B86-6.0 (29852-8)	**(p. 458 of data pkg)**			
Background reading	0.006			
Total absorbance	0.023			
Total absorbance - background	0.017			
Instrument Response (µg/L)	15.550			
Sample weight (g)	2.5			
Final Volume (mL)	100			
Percent solids	0.794			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.78	OK	Reported Result (mg/Kg)	0.78

LCS calculation	**LCSS 460-83891/2-A pg. 458**			
LCS Soluble Instrument Response	0.514			
Instrument Concentration (ug/L)	633.886			
Sample weight	2.5			
Percent solids	1			
Dilution Factor	1			
AECOM Calculated LCS Result (mg/Kg)	25.36	OK rounding	Reported Result (mg/Kg)	25.35

%R = Found/True*100				
True Value (mg/kg)	26.7			
AECOM Calculated %R	95.0	OK	Reported %R	95

MS calculation	**p. 458 EF-B86-6.0 (29852-8)**			
MS Insoluble Instrument Response	0.274			
Instrument Concentration (ug/L)	335.293			
Sample weight (g)	2.5			
Percent solids	0.794			
Dilution Factor	50			
AECOM Calculated MS Result (mg/Kg)	844.6	OK rounding	Reported Result (mg/Kg)	844.7

%R = Found/True*100	**pg. 380 of data pkg**			
True Value (mg/kg)	892			
Native concentration (g)	0			
%R	95	OK	Reported %R	95

Percent Solids	**pg. 472 EF-B86-6.0 (29852-8)**			
Empty dish weight=	1.05			
Wet weight=	5.90			
Dry weight=	4.9			
AECOM%solids =	79.4	OK	TestAmerica reported %solids=	79.4

Reporting limit EF-B86-6.0 (29852-8)	**pg. 458 of data pkg**			
Low Standard	50			
Initial weight (g)	2.5			
Final volume (mL)	100			
Percent solids	0.79			
Dilution Factor	1.00			
Reporting Limit	2.5	OK	Reported RL (mg/Kg)=	2.5

Sample Calculations:

EF-B87-4.2 (29852-1)	**pg. 458 of data pkg**			
Background reading	0.005			
Total absorbance	0.026			
Total absorbance - background	0.021			
Instrument Response (µg/L)	20.526			
Sample weight (g)	2.45			
Final Volume (mL)	100			
Percent solids	0.891			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.94	OK	Reported Result (mg/Kg)	0.94

EF-B87-6.0 (29852-2)	**pg. 458 of data pkg**			
Background reading	0.007			
Total absorbance	0.011			
Total absorbance - background	0.004			
Instrument Response (µg/L)	-0.624			
Sample weight (g)	2.49			
Final Volume (mL)	100			
Percent solids	0.843			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	-0.03	OK sample ND	Reported Result (mg/Kg)	2.4

EF-B87-10.0 (29852-3)	**pg. 458 of data pkg**			
Background reading	0.017			
Total absorbance	0.017			
Total absorbance - background	0			
Instrument Response (µg/L)	-5.601			
Sample weight (g)	2.48			
Final Volume (mL)	100			
Percent solids	0.837			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	-0.27	OK sample ND	Reported Result (mg/Kg)	2.4

EF-B87-12.0 (29852-4)	**pg. 458 of data pkg**			
Background reading	0.011			
Total absorbance	0.012			
Total absorbance - background	0.001			
Instrument Response (µg/L)	-4.357			
Sample weight (g)	2.48			
Final Volume (mL)	100			
Percent solids	0.83			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	-0.2	OK sample ND	Reported Result (mg/Kg)	2.4

EF-B87-15.0 (29852-5)	**pg. 458 of data pkg**			
Background reading	0.264			
Total absorbance	0.184			
Total absorbance - background	-0.08			
Instrument Response (µg/L)	-105.132			
Sample weight (g)	2.48			
Final Volume (mL)	100			
Percent solids	0.788			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	-5.4	OK sample ND	Reported Result (mg/Kg)	2.6

EF-B87-20.0(29852-6)	**pg. 459 of data pkg**			
Background reading	0.396			
Total absorbance	0.34			
Total absorbance - background	-0.056			
Instrument Response (µg/L)	-75.272			
Sample weight (g)	2.53			
Final Volume (mL)	100			
Percent solids	0.789			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	-4	OK sample ND	Reported Result (mg/Kg)	2.5

EF-B87-22.0 (29852-7)	**pg. 459 of data pkg**			
Background reading	0.014			
Total absorbance	0.01			
Total absorbance - background	-0.004			
Instrument Response (µg/L)	-10.577			
Sample weight (g)	2.46			
Final Volume (mL)	100			
Percent solids	0.862			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	-0.5	OK sample ND	Reported Result (mg/Kg)	2.4

EF-B86-8.0 (29852-9)	**pg. 459 of data pkg**			
Background reading	0.041			
Total absorbance	0.049			
Total absorbance - background	0.008			
Instrument Response (µg/L)	4.352			
Sample weight (g)	2.55			
Final Volume (mL)	100			
Percent solids	0.84			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.2	OK sample ND	Reported Result (mg/Kg)	2.3

EF-B86-10.0 (29852-10)	**pg. 459 of data pkg**			
Background reading	0.021			
Total absorbance	0.015			
Total absorbance - background	-0.006			
Instrument Response (µg/L)	-13.066			
Sample weight (g)	2.44			
Final Volume (mL)	100			
Percent solids	0.772			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	-0.69	OK sample ND	Reported Result (mg/Kg)	2.7

EF-B86-12.0 (29852-11)	**pg. 459 of data pkg**			
Background reading	0.036			
Total absorbance	0.028			
Total absorbance - background	-0.008			
Instrument Response (µg/L)	-15.554			
Sample weight (g)	2.44			
Final Volume (mL)	100			
Percent solids	0.823			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	-0.77	OK sample ND	Reported Result (mg/Kg)	2.5

EF-B86-15.0 (29852-12)	**pg. 459 of data pkg**			
Background reading	0.022			
Total absorbance	0.029			
Total absorbance - background	0.007			
Instrument Response (µg/L)	3.108			
Sample weight (g)	2.52			
Final Volume (mL)	100			
Percent solids	0.544			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.2	OK sample ND	Reported Result (mg/Kg)	3.6

EF-B86-16.0 (29852-13)	**pg. 459 of data pkg**			
Background reading	0.048			
Total absorbance	0.047			
Total absorbance - background	-0.001			
Instrument Response (µg/L)	-6.845			
Sample weight (g)	2.46			
Final Volume (mL)	100			
Percent solids	0.62			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	-0.4	OK sample ND	Reported Result (mg/Kg)	3.3

EF-B86-20.0 (29852-14)	**pg. 459 of data pkg**			
Background reading	0.441			
Total absorbance	0.412			
Total absorbance - background	-0.029			
Instrument Response (µg/L)	-41.681			
Sample weight (g)	2.47			
Final Volume (mL)	100			
Percent solids	0.371			
Dilution Factor	5			
AECOM Calculated Result (mg/Kg)	-22.7	Qualify for % solids < 50%	Reported Result (mg/Kg)	27.3

EF-B86-22.0 (29852-15)	**pg. 459 of data pkg**			
Background reading	0.002			
Total absorbance	0.034			
Total absorbance - background	0.032			
Instrument Response (µg/L)	34.212			
Sample weight (g)	2.44			
Final Volume (mL)	100			
Percent solids	0.829			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	1.7	OK	Reported Result (mg/Kg)	1.7

EF-B87-10.0x (29852-19)	**pg. 459 of data pkg**			
Background reading	0.01			
Total absorbance	0.032			
Total absorbance - background	0.022			
Instrument Response (µg/L)	21.770			
Sample weight (g)	2.45			
Final Volume (mL)	100			
Percent solids	0.874			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	1.0	OK	Reported Result (mg/Kg)	1.0

Client Name: PPG Industries	**Project Number:** 60154801-0007
Site Location: PPG-GAEF	**Project Manager:** Robert Cataldo
Laboratory: TestAmerica, New Jersey	**Limited or Full Validation (circle one)**
Laboratory Job No: 460-29852	**Date Checked:** 8/31/11
Validator: Justin Webster	**Peer Review:** Lisa Krowitz

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X			
Field I.D. included?	X			
Laboratory I.D. included?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6ºC?	X			3.9°C,
Signed COCs included?	X			
Date of sample collection included?	X			8/11/2011
Date of sample digestion included?	X			Aqs – 8/19/11 and Soil 8/17/11
Date of analysis included?	X			Aqs – 8/19/11 and Soil 8/18/11
Holding time met QC criteria? Metals -180 days from sample collection Mercury – 28 days from sample collection If HT exceeded by - ≤ 10 days, J/UJ all results - > 10 days, R all results	X			See table below “Holding Times”
Method reference included?	X			SW846 3010A/3050B/6010C/6020
Laboratory Case Narrative included?	X			
Sample Dilutions	x			Ef-B97-2.5(4x), EF-B98-2.5(4x), and EB081111(5x)
Field Duplicates (“x “appended to sample ID) (RPD calculation on separate sheet)			x	None for this SDG

Definitions: MDL – Method Detection Limit; %R – Percent Recovery; RL – Reporting Limit; RPD – Relative Percent Difference; RSD – Relative Standard Deviation :Corr – Correlation Coefficient.

Comments

ITEM	YES	NO	N/A	COMMENTS
Initial Calibration Documentation Included in Lab Package?			X	**Not reviewed for limited validation**
1. Calibrate daily or each time instrument is set up?. If no, reject (R) data. 2. ICP (6010) - Blank plus 1standard? If no, reject (R) data. 3. Hg (7470/7471) – Blank plus 5 standards? If no, reject (R) data.				
Initial Calibration Verification Standard (ICV) for ICP (6010) and Initial Calibration Check Standard (ICCS) for Hg (7470/7471) Included in Lab Package?			X	**Not reviewed for limited validation**
1. Analyzed immediately after initial calibration? If no, reject (R) data. 2. %R criteria met? (90 - 110%). If no, J positive results for affected analyte(s) if %R between 80-89% and 111-120% and indicate bias UJ non-detect results for affected analyte(s) if R% between 80-89% R all data for affected analyte(s) if <80% or >120% 3. Spot check ICV/ICCS results for several analytes				
Continuing Calibration Verification Standard (CCV) for ICP (6010) and Calibration Check Standard (CCS) for Hg (7470/7471) included in Lab Package?			X	**Not reviewed for limited validation**
1. Analyzed immediately after each ICV/ICC/CB and after every 10 samples? If no, reject (R) data. 2. CCS and CCV from independent source and at mid level of calibration curve. If no, reject (R) data. 3. %R criteria met? (90 - 110%) If no, J positive results for affected analyte(s) if %R between 80-89% and 111-120% and indicate bias UJ non-detect results for affected analyte(s) if %R between 80-89% R all data for affected analyte(s) if %R <80% or >120% 4. Spot check CCV/CCS results for several analytes				
Low Calibration Standard (CRI) included in Lab Package?			X	**Not reviewed for limited validation**
1. %R criteria met? - 50 - 150% for Co, Mn, Zn by ICP-MS, PB, Tl by 6010) - 70-130% all others If no, refer to ILM05.4 NJ SOP 5.A.2 for actions.				
Calibration Blanks			X	**Not reviewed for limited validation**
1. Analyzed immediately after daily calibration and after each ICV/ICC/CCV/CCS, and after every 10 samples? If no, reject (R) data. 2. Absolute value $\leq$ 3xIDL? If no, - if sample result $\leq$ 10xCB result, qualify affected analyte(s) in associated samples with CB - if sample result > 10xCB result, no qualification				
Method Blank included in Lab Package?	X			
1, Method blank analyzed with each preparation batch or every SDG, or 1/20 samples? If no, reject (R) data, except no aqueous MB required for FB/EB if only soil samples were analyzed. 2. Method blank analyzed 1/20 samples? If – MB 1/25, J sample results from 21-25 – MB > 1/25, R sample results after 25th sample 3. MB result nondetect? If no, - Sample result $\leq$ 3xMB, negate UB - Sample result <3xMB, but $\leq$10xMB, JB - Sample result > 10xMB, no qualification 4. Negative MB result reported? If yes, -Positive sample result $\leq$ 10xMB, qualify estimated, biased low (J) -Non-detect sample result, qualify UJ, may be false non-detect				1. Yes 2. Yes 3. Yes, for aqueous and solid analyses. 4. No
Field Blanks/Equipment Blanks included in Lab Package?	X			**Blanks apply to samples collected during same week as blank**
1, FB/EB result nondetect? If no, - Sample result $\leq$ 3xFB/EB, negate U - Sample result <3xFB/EB, but $\leq$10xFB/EB, J - Sample result > 10xFB/EB, no qualification				Field Blank FB081111 was reported as nondetect.

ITEM	YES	NO	N/A	COMMENTS
ICP Interference Check Sample (ICS) included in Lab Package?			X	**Not reviewed for limited validation**
1. Analyzed at beginning of analytical run? If no, reject (R) data. 2. %R criteria met? (80-120%) If no, %R > 120%, no qualification if sample result non-detect %R between 121-150%, J positive results, biased high %R between 50-79%, J/UJ results, biased low %R <50% or >150%, reject (R) result 3. Spot check accuracy of %Rs				
Matrix Spike/Matrix Spike Duplicate Data Included in Lab Package?	X			**MSD also used as laboratory duplicate QC**
1. MS/MSD %R (75-125%R) and RPD (± 20%) criteria met? - %R >125% J positive results for affected analyte(s) for all samples in the same batch/SDG, accept NDs. - %R <75% J/UJ for affected analyte(s) for all samples in the same batch/SDG – RPD outside ± 20% J positive results for affected analyte(s) for all samples in the same batch/SDG, accept NDs. 2. Was a sample spiked at the frequency of 1/batch or 20 samples? 3, Was the MS performed on a site sample? 4. Was the MS performed on a FB/EB or TB? If yes, J all sample data.				1. Spiked non site samples will not be applied. See LCS 2.Frequency OK 3.No 4.No
Serial Dilution			X	**Not reviewed for limited validation**
1. %D (≤ 10%R) criteria met? – If analyte concentration > 25xIDL (7000) or > 10x IDL (6010) and %D > 10% J positive results for affected analyte(s) for all samples in the same batch/SDG, accept NDs. 2. Was the frequency 1/batch or 20 samples? 3, Was a site sample used? 4. Was a FB/EB or TB used? If yes, J all sample data. **5.** Spot check accuracy of %Ds				
Post Digestion Spike			X	**Not reviewed for limited validation**
1. %R criteria met? (75-125%R). - %R >125% J positive results for affected analyte(s) for all samples in the same batch/SDG, accept NDs. - %R <75% J/UJ affected analyte(s) for all samples in the same batch/SDG. 2. Was the spike performed on a FB/EB or TB? If yes, J all sample data? 3. Was a sample spiked at the frequency of 1/batch or 20 samples?				
Laboratory Control Sample Data Included in Lab Package?	X			
1. LCS %R (80-120%R) criteria met? If no, J/UJ all affected analyte(s) for all samples in the same batch/SDG. data. 2. Was a sample spiked at the frequency of 1/batch or 20 samples? If no, J/UJ affected analyte(s) for all sample in the same batch/SDG.	x			Yes, the soil LCSs was within quality control criteria.
Laboratory Duplicate Data Included in Lab Package?	X			***MSD used as laboratory duplicate QC**
Aqueous If RPD is >20% but <100% and sample and field duplicate results are >5x the QL, estimate (J) results > the QL. If RPD is >100%, reject (R) results ≥ the QL. If sample and/or duplicate is <5x the QL and absolute difference is > the QL, estimate (J) positive results <5x the QL and nondetects (UJ). If absolute difference is > 2x the QL, reject (R) non detects and positive results <5x the QL. SOIL: If RPD is >35% but <120% and sample and field duplicate results are >5x the QL, estimate (J) results > the QL. If RPD is > 120%, reject (R) results > the QL. If sample and/or duplicate is <5x the QL and absolute difference is >2x the QL, estimate (J) positive results <5x QL and nondetects (UJ). If absolute difference is >4x the QL, reject (R) non detects and positive results <5x QL.				See MS/MSD section above

ITEM	YES	NO	N/A	COMMENTS
Field Duplicate Data Included in Lab Package?			x	Not applicable for this SDG
Aqueous If RPD is >20% but <100% and sample and field duplicate results are >5x the QL, estimate (J) results > the QL. If RPD is >100%, reject (R) results ≥ the QL. If sample and/or duplicate is <5x the QL and absolute difference is > the QL, estimate (J) positive results <5x the QL and nondetects (UJ). If absolute difference is > 2x the QL, reject (R) non detects and positive results <5x the QL. SOIL: If RPD is >35% but <120% and sample and field duplicate results are >5x the QL, estimate (J) results > the QL. If RPD is > 120%, reject (R) results > the QL. If sample and/or duplicate is <5x the QL and absolute difference is >2x the QL, estimate (J) positive results <5x QL and nondetects (UJ). - If absolute difference is >4x the QL, reject (R) non detects and positive results <5x QL.				

Holding Time

Sample ID	Method	Days from Sampling to Prep	Days from Prep to Analysis	Days from Sampling to Analysis	Sampling to Prep Status	Prep to Analysis Status	Sampling to Analysis Status
EF-B97-2.5	SW6010	6	1	7	Ok @ 6 days	Ok @ 1 days	OK @180 days
EF-B98-2.5	SW6010	6	1	7	Ok @ 6 days	Ok @ 1 days	OK @180 days
FB081111	SW6020	8	0	8	Ok @ 8 days	Ok @ 0 days	OK @180 days

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Data Validation Report

Project	PPG – GA EF	Page 1
Laboratory	Test America, NJ	
Laboratory Job No.	460-25550	
Analysis/Method	TAL Metals (Limited – Sb, Cr, Ni, Tl, V) SW-846 3050B/6010B/7471A	
Validation Level	QC Summary Review (Limited)	
Site Location/Address	Garfield Avenue, Soil RI, Site 114, Jersey City, NJ	
AECOM Project Number	60154801.0007	
Prepared by Sharon McKechnie/AECOM	Completed on: May 31, 2011	
Reviewed by Lisa Krowitz/AECOM	File Name: 2011-05-31 TAL Metals DV Report 460-25550 F.docx	

Introduction

The results of quality control data analyzed with site samples were used to assess the overall reliability of the data. The following qualifiers were used to identify data quality issues:

U: Indicates the analyte was not detected in the sample above the sample reporting limit.

J: Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

UJ: Indicates the analyte was not detected above the reporting limit and the reporting limit was approximate.

R: The sample result was rejected due to serious deficiencies; the presence or absence of the analyte could not be confirmed.

Sample Information

The samples listed below were collected by AECOM on April 19, 2011 as part of the Garfield Avenue Soil RI sampling task at PPG Site 114, Jersey City, New Jersey.

Field ID	Laboratory ID	Matrix	Fraction
EF-B21-7.5	460-25550-2	Soil	TAL Metals
EF-B21-12.5	460-25550-5	Soil	TAL Metals
EF-B21-17.5	460-25550-7	Soil	TAL Metals
EF-B21-22.5	460-25550-8	Soil	TAL Metals

Field ID	Laboratory ID	Matrix	Fraction
EF-B20-7.0	460-25550-10	Soil	TAL Metals
EF-B20-12.0	460-25550-12	Soil	TAL Metals
EF-B20-17.0	460-25550-14	Soil	TAL Metals
EF-B20-22.0	460-25550-15	Soil	TAL Metals
EF-B19-6.0	460-25550-16	Soil	TAL Metals
EF-B19-11.0	460-25550-18	Soil	TAL Metals
EF-B19-17.5	460-25550-21	Soil	TAL Metals
EF-B19-17.5X (Field duplicate of EF-B19-17.5)	460-25550-22	Soil	TAL Metals
EF-B19-22.5	460-25550-23	Soil	TAL Metals
EF-B22-5.5	460-25550-24	Soil	TAL Metals
EF-B22-12.0	460-25550-26	Soil	TAL Metals
EF-B22-17.5	460-25550-27	Soil	TAL Metals
EF-B22-22.5	460-25550-29	Soil	TAL Metals
EF-B19-2.5	460-25550-33	Soil	TAL Metals
EF-B22-2.5	460-25550-37	Soil	TAL Metals
EF-B17-2.5	460-25550-41	Soil	TAL Metals
EF-B31-2.5	460-25550-45	Soil	TAL Metals
EB-041911 (Equipment blank collected 4/19/11)	460-25550-30	Aqueous	TAL Metals

Soil samples were collected following the procedures detailed in the Approved Remedial Investigation Work Plan-Soil Non-Residential Chromate Production Waste Sites 114, 132, 133, 135, 137, 143, and 186 (March 2011).

General Comments

The data package was complete. Quality control (QC) issues identified during validation are discussed below. Selected results were qualified as estimated for certain QC nonconformances. Refer to the Target Analyte Summary Hit List for a listing of all detected results, qualified results, and associated qualifications, where applicable.

Matrix Spike Results

Some matrix spike/matrix spike duplicates (MS/MSD) for mercury, aqueous metals, and solid metals batches were performed on non-site specific samples or samples from other SDGs. No actions were taken for MS and/or MSD nonconformances from non-site specific samples due to potential differences in the sample matrices. Refer to Attachments A and B for the MS/MSD nonconformances and qualified results.

Laboratory Duplicate Results

The laboratory duplicate (LD) relative percent difference (RPD) for mercury exceeded the QC criteria of ± 35% for soil samples for sample EF-B19-22.5. Refer to Attachments A and B for the laboratory duplicate nonconformances.

Mercury results were accepted without qualification since the sample and duplicate results were each less than 5x the reporting limit (RL) and the absolute differences were less than 2x the RL.

Sample Reporting Limits

Selected soil and/or aqueous reporting limits exceeded the NJDEP Default Impact to GW Soil Screening Levels and/or NJDEP Specific GW Quality Criteria, respectively: The non-detect results with reporting limits that exceeded the NJDEP standards are presented in the attached Data Validation Report Form.

Data Quality and Recommendations

In general, these data appear to be valid and may be used for decision-making purposes. With the exception of the qualified results, all TAL metals results were accepted as reported by the laboratory.

Attachments

Attachment A Target Analyte Summary Hitlist(s)

Attachment B Data Validation Report Form

Attachment A

Target Analyte Summary Hitlist(s)

Soil Target Analyte Summary Hit List

Site Name Garfield Avenue Soil RI, Site 114, Jersey City, NJ
Sampling Date April 19, 2011
Lab Name/ID Test America, Edison, NJ
SDG No 460-25550
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID EB041911

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
EF-B17-2.5	460-25550-41	ANTIMONY	U	2.8	2.8	2.3	Qualify	15
EF-B17-2.5	460-25550-41	CHROMIUM	U	464	464	2.3		
EF-B17-2.5	460-25550-41	NICKEL	U	48.7	48.7	9.2		
EF-B17-2.5	460-25550-41	VANADIUM	U	33.3	33.3	11.5		
EF-B19-11.0	460-25550-18	ANTIMONY	U	U	U	2.3	Qualify	15
EF-B19-11.0	460-25550-18	CHROMIUM	U	15.9	15.9	2.3		
EF-B19-11.0	460-25550-18	NICKEL	U	11.9	11.9	9.4		
EF-B19-11.0	460-25550-18	VANADIUM	U	23.1	23.1	11.7		
EF-B19-17.5	460-25550-21	ANTIMONY	U	U	U	5.2	Qualify	15
EF-B19-17.5	460-25550-21	CHROMIUM	U	25.0	25.0	5.2		
EF-B19-17.5	460-25550-21	NICKEL	U	18.0	18.0	20.8		
EF-B19-17.5	460-25550-21	VANADIUM	U	35.4	35.4	26.0		
EF-B19-17.5X	460-25550-22	ANTIMONY	U	U	U	5.5	Qualify	15
EF-B19-17.5X	460-25550-22	CHROMIUM	U	29.7	29.7	5.5		
EF-B19-17.5X	460-25550-22	NICKEL	U	22.6	22.6	21.9		
EF-B19-17.5X	460-25550-22	VANADIUM	U	42.8	42.8	27.4		
EF-B19-2.5	460-25550-33	ANTIMONY	U	U	U	2.4	Qualify	15

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
EF-B19-2.5	460-25550-33	CHROMIUM	U	12.3	12.3	2.4		
EF-B19-2.5	460-25550-33	NICKEL	U	15.5	15.5	9.5		
EF-B19-2.5	460-25550-33	VANADIUM	U	13.9	13.9	11.9		
EF-B19-22.5	460-25550-23	ANTIMONY	U	U	U	3.8	Qualify	15
EF-B19-22.5	460-25550-23	CHROMIUM	U	20.5	20.5	3.8		
EF-B19-22.5	460-25550-23	NICKEL	U	17.8	17.8	15.3		
EF-B19-22.5	460-25550-23	VANADIUM	U	31.4	31.4	19.1		
EF-B19-6.0	460-25550-16	ANTIMONY	U	U	U	2.4	Qualify	15
EF-B19-6.0	460-25550-16	CHROMIUM	U	21.5	21.5	2.4		
EF-B19-6.0	460-25550-16	NICKEL	U	11.7	11.7	9.4		
EF-B19-6.0	460-25550-16	VANADIUM	U	23.1	23.1	11.8		
EF-B20-12.0	460-25550-12	ANTIMONY	U	U	U	2.3	Qualify	15
EF-B20-12.0	460-25550-12	CHROMIUM	U	19.2	19.2	2.3		
EF-B20-12.0	460-25550-12	NICKEL	U	14.0	14.0	9.3		
EF-B20-12.0	460-25550-12	VANADIUM	U	30.8	30.8	11.6		
EF-B20-17.0	460-25550-14	ANTIMONY	U	U	U	3.6	Qualify	15
EF-B20-17.0	460-25550-14	CHROMIUM	U	38.0	38.0	3.6		
EF-B20-17.0	460-25550-14	NICKEL	U	27.9	27.9	14.3		
EF-B20-17.0	460-25550-14	VANADIUM	U	43.4	43.4	17.9		
EF-B20-22.0	460-25550-15	ANTIMONY	U	U	U	2.5	Qualify	15
EF-B20-22.0	460-25550-15	CHROMIUM	U	11.5	11.5	2.5		
EF-B20-22.0	460-25550-15	NICKEL	U	15.1	15.1	9.9		
EF-B20-22.0	460-25550-15	VANADIUM	U	14.2	14.2	12.4		
EF-B20-7.0	460-25550-10	ANTIMONY	U	U	U	2.3	Qualify	15
EF-B20-7.0	460-25550-10	CHROMIUM	U	15.9	15.9	2.3		
EF-B20-7.0	460-25550-10	NICKEL	U	10.3	10.3	9.1		
EF-B20-7.0	460-25550-10	VANADIUM	U	31.5	31.5	11.3		
EF-B21-12.5	460-25550-5	ANTIMONY	U	U	U	2.2	Qualify	15

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
EF-B21-12.5	460-25550-5	CHROMIUM	U	15.3	15.3	2.2		
EF-B21-12.5	460-25550-5	NICKEL	U	10.7	10.7	8.8		
EF-B21-12.5	460-25550-5	VANADIUM	U	23.9	23.9	11.0		
EF-B21-17.5	460-25550-7	ANTIMONY	U	U	U	4.7	Qualify	15
EF-B21-17.5	460-25550-7	CHROMIUM	U	32.4	32.4	4.7		
EF-B21-17.5	460-25550-7	NICKEL	U	20.6	20.6	18.8		
EF-B21-17.5	460-25550-7	VANADIUM	U	51.3	51.3	23.5		
EF-B21-22.5	460-25550-8	ANTIMONY	U	U	U	2.5	Qualify	15
EF-B21-22.5	460-25550-8	CHROMIUM	U	14.9	14.9	2.5		
EF-B21-22.5	460-25550-8	NICKEL	U	25.4	25.4	10.1		
EF-B21-22.5	460-25550-8	VANADIUM	U	27.5	27.5	12.6		
EF-B21-7.5	460-25550-2	ANTIMONY	U	U	U	2.5	Qualify	15
EF-B21-7.5	460-25550-2	CHROMIUM	U	17.4	17.4	2.5		
EF-B21-7.5	460-25550-2	NICKEL	U	12.1	12.1	10.0		
EF-B21-7.5	460-25550-2	VANADIUM	U	29.7	29.7	12.5		
EF-B22-12.0	460-25550-26	ANTIMONY	U	U	U	2.3	Qualify	15
EF-B22-12.0	460-25550-26	CHROMIUM	U	13.8	13.8	2.3		
EF-B22-12.0	460-25550-26	NICKEL	U	9.1	9.1	9.3		
EF-B22-12.0	460-25550-26	VANADIUM	U	20.8	20.8	11.7		
EF-B22-17.5	460-25550-27	ANTIMONY	U	U	U	6.4	Qualify	15
EF-B22-17.5	460-25550-27	CHROMIUM	U	24.7	24.7	6.4		
EF-B22-17.5	460-25550-27	NICKEL	U	15.9	15.9	25.7		
EF-B22-17.5	460-25550-27	VANADIUM	U	36.1	36.1	32.1		
EF-B22-2.5	460-25550-37	ANTIMONY	U	2.2	2.2	2.2	Qualify	15
EF-B22-2.5	460-25550-37	CHROMIUM	U	54.1	54.1	2.2		
EF-B22-2.5	460-25550-37	NICKEL	U	66.3	66.3	8.9		
EF-B22-2.5	460-25550-37	VANADIUM	U	18.9	18.9	11.1		
EF-B22-22.5	460-25550-29	ANTIMONY	U	U	U	2.8	Qualify	15

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
EF-B22-22.5	460-25550-29	CHROMIUM	U	15.7	15.7	2.8		
EF-B22-22.5	460-25550-29	NICKEL	U	15.9	15.9	11.1		
EF-B22-22.5	460-25550-29	VANADIUM	U	19.2	19.2	13.9		
EF-B22-5.5	460-25550-24	ANTIMONY	U	2.8	2.8	2.5	Qualify	15
EF-B22-5.5	460-25550-24	CHROMIUM	U	13.4	13.4	2.5		
EF-B22-5.5	460-25550-24	NICKEL	U	14.5	14.5	10.1		
EF-B22-5.5	460-25550-24	VANADIUM	U	21.1	21.1	12.6		
EF-B31-2.5	460-25550-45	ANTIMONY	U	U	U	2.6	Qualify	15
EF-B31-2.5	460-25550-45	NICKEL	U	601	601	10.4		
EF-B31-2.5	460-25550-45	VANADIUM	U	345	345	12.9		
EF-B31-2.5	460-25550-45	CHROMIUM	U	5190	5190	12.9		

Note: The “U” under Method Blank column indicates a nondetect result
The “U” under the Laboratory Sample Result and Validation Sample Result columns indicate a nondetect result at the RL.

NJ DEP Hitlist Footnotes:

1) The value reported is less than or equal to 3x the value in the method blank. It is the policy of NJDEP-DPFSR to negate the reported value due to probable foreign contamination unrelated to the actual sample. The end-user, however, is alerted that a reportable quantity of the analyte was detected.

2) The value reported is greater than three (3) but less than ten (10) times the value in the method blank and is considered "real". However, the reported value must be quantitatively qualified "J" due to the method blank contamination. The "B" qualifier alerts the end-user to the presence of this analyte in the method blank.

3) The value reported is less than or equal to 3x the value in the trip/field blank. It is the policy of NJDEP-DPFSR to negate the reported value as due to probable foreign contamination unrelated to the actual sample. The end-user, however, is alerted that a reportable quantity of the analyte was detected.

4.) The value reported is greater than 3x but less than ten (10) the value in the trip/field blank and is considered "real". However, the reported value must be quantitatively qualified "J" due to trip/field blank contamination.

5.) The concentration reported by the laboratory is incorrectly calculated.

6.) The laboratory failed to report the presence of the analyte in the sample.

7.) The reported metal value was qualified because the Calibration Verification Standard was not within the recovery range (90-110 percent).

8) In the MS/MSD Sample Analysis, this analyte fell outside the control limits of 20% RPD. Therefore, the result was qualified.

9.) This analyte was qualified because the laboratory performed the MS/MSD Analysis on a field blank.

10) The reported analyte was qualified because the associated Calibration Blank result was greater than the MDL.

11) The reported value was qualified because serial dilution analysis was not within QC limit of 10% D.

12) This analyte is rejected because the laboratory exceeded the holding time for digestion and analysis.

13) The laboratory subtracted the method blank from the sample result. The reviewer's calculation has added the method blank result to the reported concentration.

14) The photocopy submitted is illegible. Therefore, the QA reviewer cannot read the laboratory's reported concentration result.

15) The reported or nondetected value was qualified because the MS/MSD spike recovery was less than 75 percent.

16) The reported value was qualified because the MS/MSD spike recovery was greater than 125 percent.

17) The non-detected value was qualified (UJ) because the MS/MSD spike recovery was less than 75 percent. The possibility of a false negative exists.

18) In the field duplicate analysis this analyte fell outside of the RPD control limits. Therefore, the result was qualified.

19) The laboratory failed to analyze an MS/MSD for the particular matrix. Therefore, the result was rejected.

20) The reported or nondetect value was qualified with an uncertain bias because the MS %R and MSD %R had opposing biases.

21) In the soil laboratory duplicate analysis this analyte fell outside of the control limits of 35% RPD. Therefore, the result was qualified.

22) The reported or nondetected value was rejected because the MS/MSD spike recovery was less than 10 percent.

23) The reported analyte was qualified (J) because the associated sample result was greater than the MDL but less than the RL.

24) The reported value was qualified because the percent solids was <50%

Attachment B

Data Validation Report Form

Client Name: PPG Industries	**Project Number:** 60154801-0007
Site Location: PPG- Garfield Avenue Soil RI, Site 114, Jersey City, NJ	**Project Manager:** Craig MacPhee
Laboratory: Test America, New Jersey	**Limited or Full Validation (circle one)**
Laboratory Job No: 460-25550	**Date Checked:** 5/31/2011
Validator: Sharon McKechnie	**Peer Review:** Lisa Krowitz

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X	X*		*See attached table "Dilutions and Reporting Limits". Elevated reporting limits due to sample dilutions.
Field I.D. included?	X			
Laboratory I.D. included?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6ºC?	X			1.1ºC, 1.7ºC no qualifications for minor nonconformances
Signed COCs included?	X			
Date of sample collection included?	X			Collected 4/19/2011
Date of sample digestion included?	X			
Date of analysis included?	X			
Holding time met QC criteria? Metals -180 days from sample collection Mercury – 28 days from sample collection If HT exceeded by - ≤ 10 days, J/UJ all results - > 10 days, R all results	X			See attached table "Hold Times"
Method reference included?	X			
Laboratory Case Narrative included?	X			
Sample Dilutions	X			See attached table "Dilutions and Reporting Limits""
Field Duplicates ("x "appended to sample ID) (RPD calculation on separate sheet)	X			EF-B19-17.5/ EF-B19-17.5X

Definitions: MDL – Method Detection Limit; %R – Percent Recovery; RL – Reporting Limit; RPD – Relative Percent Difference; RSD – Relative Standard Deviation :Corr – Correlation Coefficient.

Comments

Selected metals in all soil samples were reanalyzed within hold time

QA/QC CHECKLIST FOR TAL METALS ANALYSIS

ITEM	YES	NO	N/A	COMMENTS
Initial Calibration Documentation Included in Lab Package?			X	**Not reviewed for limited validation**
1. Calibrate daily or each time instrument is set up?. If no, reject (R) data. 2. ICP (6010) - Blank plus 1standard? If no, reject (R) data. 3. Hg (7470/7471) – Blank plus 5 standards? If no, reject (R) data.				
Initial Calibration Verification Standard (ICV) for ICP (6010) and Initial Calibration Check Standard (ICCS) for Hg (7470/7471) Included in Lab Package?			X	**Not reviewed for limited validation**
1. Analyzed immediately after initial calibration? If no, reject (R) data. 2. %R criteria met? (90 - 110%). If no, J positive results for affected analyte(s) if %R between 80-89% and 111-120% and indicate bias UJ non-detect results for affected analyte(s) if R% between 80-89% R all data for affected analyte(s) if <80% or >120% 3. Spot check ICV/ICCS results for several analytes				
Continuing Calibration Verification Standard (CCV) for ICP (6010) and Calibration Check Standard (CCS) for Hg (7470/7471) included in Lab Package?			X	**Not reviewed for limited validation**
1. Analyzed immediately after each ICV/ICC/CB and after every 10 samples? If no, reject (R) data. 2. CCS and CCV from independent source and at mid level of calibration curve. If no, reject (R) data. 3. %R criteria met? (90 - 110%) If no, J positive results for affected analyte(s) if %R between 80-89% and 111-120% and indicate bias UJ non-detect results for affected analyte(s) if %R between 80-89% R all data for affected analyte(s) if %R <80% or >120% 4. Spot check CCV/CCS results for several analytes				
Low Calibration Standard (CRI) included in Lab Package?			X	**Not reviewed for limited validation**
1. %R criteria met? - 50 - 150% for Co, Mn, Zn by ICP-MS, PB, Tl by 6010) - 70-130% all others If no, refer to ILM05.4 NJ SOP 5.A.2 for actions.				
Calibration Blanks			X	**Not reviewed for limited validation**
1. Analyzed immediately after daily calibration and after each ICV/ICC/CCV/CCS, and after every 10 samples? If no, reject (R) data. 2. Absolute value ≤ 3xIDL? If no, - if sample result ≤ 10xCB result, qualify affected analyte(s) in associated samples with CB - if sample result > 10xCB result, no qualification				
Method Blank included in Lab Package?	X			
1, Method blank analyzed with each preparation batch or every SDG, or 1/20 samples? If no, reject (R) data, except no aqueous MB required for FB/EB if only soil samples were analyzed. 2. Method blank analyzed 1/20 samples? If – MB 1/25, J sample results from 21-25 – MB > 1/25, R sample results after 25th sample 3. MB result nondetect? If no, - Sample result ≤ 3xMB, negate UB - Sample result <3xMB, but ≤10xMB, JB - Sample result > 10xMB, no qualification 4. Negative MB result reported? If yes, -Positive sample result ≤ 10xMB, qualify estimated, biased low (J) -Non-detect sample result, qualify UJ, may be false non-detect				1. Yes 2. 1/ batch 3. Yes 4.No
Field Blanks/Equipment Blanks included in Lab Package?	X			**Blanks apply to samples collected during same week as blank**
1, FB/EB result nondetect? If no, - Sample result ≤ 3xFB/EB, negate U - Sample result <3xFB/EB, but ≤10xFB/EB, J - Sample result > 10xFB/EB, no qualification				EB041911, all ND

ITEM	YES	NO	N/A	COMMENTS
ICP Interference Check Sample (ICS) included in Lab Package?			X	**Not reviewed for limited validation**
1. Analyzed at beginning of analytical run? If no, reject (R) data. 2. %R criteria met? (80-120%) If no, %R > 120%, no qualification if sample result non-detect %R between 121-150%, J positive results, biased high %R between 50-79%, J/UJ results, biased low %R <50% or >150%, reject (R) result 3. Spot check accuracy of %Rs				
Matrix Spike/Matrix Spike Duplicate Data Included in Lab Package?	X			**MSD also used as laboratory duplicate QC**
1. MS/MSD %R (75-125%R) and RPD (± 20%) criteria met? - %R >125% J positive results for affected analyte(s) for all samples in the same batch/SDG, accept NDs. - %R <75% J/UJ for affected analyte(s) for all samples in the same batch/SDG – RPD outside ± 20% J positive results for affected analyte(s) for all samples in the same batch/SDG, accept NDs. 2. Was a sample spiked at the frequency of 1/batch or 20 samples? 3, Was the MS performed on a site sample? 4. Was the MS performed on a FB/EB or TB? If yes, J all sample data.		X		1. Some MS %R nonconformances. Refer to MS/MSD Summary Table for nonconformances. 2.Frequency OK 3. Spiked non site samples will not be applied 4.NA
Serial Dilution			X	**Not reviewed for limited validation**
1. %D (≤ 10%R) criteria met? – If analyte concentration > 25xIDL (7000) or > 10x IDL (6010) and %D > 10% J positive results for affected analyte(s) for all samples in the same batch/SDG, accept NDs. 2. Was the frequency 1/batch or 20 samples? 3, Was a site sample used? 4. Was a FB/EB or TB used? If yes, J all sample data. **5.** Spot check accuracy of %Ds				
Post Digestion Spike			X	**Not reviewed for limited validation**
1. %R criteria met? (75-125%R). - %R >125% J positive results for affected analyte(s) for all samples in the same batch/SDG, accept NDs. - %R <75% J/UJ affected analyte(s) for all samples in the same batch/SDG. 2. Was the spike performed on a FB/EB or TB? If yes, J all sample data? 3. Was a sample spiked at the frequency of 1/batch or 20 samples?				
Laboratory Control Sample Data Included in Lab Package?	X			
1. LCS %R (80-120%R) criteria met? If no, J/UJ all affected analyte(s) for all samples in the same batch/SDG. data. 2. Was a sample spiked at the frequency of 1/batch or 20 samples? If no, J/UJ affected analyte(s) for all sample in the same batch/SDG.				1. Yes 2. 1/batch
Laboratory Duplicate Data Included in Lab Package?	X			
Aqueous If RPD is >20% but <100% and sample and field duplicate results are >5x the QL, estimate (J) results > the QL. If RPD is >100%, reject (R) results ≥ the QL. If sample and/or duplicate is <5x the QL and absolute difference is > the QL, estimate (J) positive results <5x the QL and nondetects (UJ). If absolute difference is > 2x the QL, reject (R) non detects and positive results <5x the QL. SOIL: If RPD is >35% but <120% and sample and field duplicate results are >5x the QL, estimate (J) results > the QL. If RPD is > 120%, reject (R) results > the QL. If sample and/or duplicate is <5x the QL and absolute difference is >2x the QL, estimate (J) positive results <5x QL and nondetects (UJ). If absolute difference is >4x the QL, reject (R) non detects and positive results <5x QL.	X X			All met RPD criteria except: • EF-B19-22.5 (SOLID): Mercury (43%), both results <5x RL, absolute diff<2x RL so accept without qualification

ITEM	YES	NO	N/A	COMMENTS
Field Duplicate Data Included in Lab Package?	X			
Aqueous If RPD is >20% but <100% and sample and field duplicate results are >5x the QL, estimate (J) results > the QL. If RPD is >100%, reject (R) results ≥ the QL. If sample and/or duplicate is <5x the QL and absolute difference is > the QL, estimate (J) positive results <5x the QL and nondetects (UJ). If absolute difference is > 2x the QL, reject (R) non detects and positive results <5x the QL. SOIL: If RPD is >35% but <120% and sample and field duplicate results are >5x the QL, estimate (J) results > the QL. If RPD is > 120%, reject (R) results > the QL. If sample and/or duplicate is <5x the QL and absolute difference is >2x the QL, estimate (J) positive results <5x QL and nondetects (UJ). If absolute difference is >4x the QL, reject (R) non detects and positive results <5x QL.				EF-B19-17.5/ EF-B19-17.5X See “Field Duplicate Summary Table” below

Hold Times

Sample ID	Matrix	Analysis Method	Sample Date	Prep Date	Analysis Date	Sample To Prep	Prep To Analysis	Sample To Analysis	Status
EB-041911	WQ	SW6010	4/19/2011 14:55	4/29/2011 10:46	4/29/2011 21:14	10	0	10	OK @180 days
EF-B17-2.5	SO	SW6010	4/19/2011 11:55	4/27/2011 8:43	4/27/2011 20:38	8	0	8	OK @180 days
EF-B19-11.0	SO	SW6010	4/19/2011 11:10	4/27/2011 8:43	4/27/2011 19:46	8	0	8	OK @180 days
EF-B19-17.5	SO	SW6010	4/19/2011 11:25	4/27/2011 8:43	4/27/2011 19:49	8	0	8	OK @180 days
EF-B19-17.5X	SO	SW6010	4/19/2011 11:28	4/27/2011 8:43	4/27/2011 19:53	8	0	8	OK @180 days
EF-B19-2.5	SO	SW6010	4/19/2011 9:15	4/27/2011 8:43	4/27/2011 19:57	8	0	8	OK @180 days
EF-B19-22.5	SO	SW6010	4/19/2011 11:35	4/27/2011 8:43	4/27/2011 15:40	8	0	8	OK @180 days
EF-B19-6.0	SO	SW6010	4/19/2011 11:00	4/27/2011 8:43	4/27/2011 19:42	8	0	8	OK @180 days
EF-B20-12.0	SO	SW6010	4/19/2011 10:15	5/11/2011 7:39	5/12/2011 13:27	22	1	23	OK @180 days
EF-B20-17.0	SO	SW6010	4/19/2011 10:25	4/27/2011 8:43	4/27/2011 19:27	8	0	8	OK @180 days
EF-B20-22.0	SO	SW6010	4/19/2011 10:30	4/27/2011 8:43	4/27/2011 19:30	8	0	8	OK @180 days
EF-B20-7.0	SO	SW6010	4/19/2011 10:05	4/27/2011 8:43	4/27/2011 19:23	8	0	8	OK @180 days
EF-B21-12.5	SO	SW6010	4/19/2011 9:20	4/27/2011 8:43	4/27/2011 19:12	8	0	8	OK @180 days
EF-B21-17.5	SO	SW6010	4/19/2011 9:30	4/27/2011 8:43	4/27/2011 19:16	8	0	8	OK @180 days
EF-B21-22.5	SO	SW6010	4/19/2011 9:35	4/27/2011 8:43	4/27/2011 19:19	8	0	8	OK @180 days
EF-B21-7.5	SO	SW6010	4/19/2011 9:05	4/27/2011 8:43	4/27/2011 22:27	8	0	8	OK @180 days
EF-B22-12.0	SO	SW6010	4/19/2011 14:05	4/27/2011 8:43	4/27/2011 20:04	8	0	8	OK @180 days
EF-B22-17.5	SO	SW6010	4/19/2011 14:10	4/27/2011 8:43	4/27/2011 20:08	8	0	8	OK @180 days
EF-B22-2.5	SO	SW6010	4/19/2011 10:25	4/27/2011 8:43	4/27/2011 20:34	8	0	8	OK @180 days
EF-B22-22.5	SO	SW6010	4/19/2011 14:25	4/27/2011 8:36	4/27/2011 20:49	8	0	8	OK @180 days
EF-B22-5.5	SO	SW6010	4/19/2011 13:50	4/27/2011 8:43	4/27/2011 20:00	8	0	8	OK @180 days
EF-B31-2.5	SO	SW6010	4/19/2011 14:00	4/27/2011 8:43	4/27/2011 20:42	8	0	8	OK @180 days
EF-B31-2.5	SO	SW6010	4/19/2011 14:00	4/27/2011 8:43	4/28/2011 10:38	8	1	9	OK @180 days

REPORTING LIMITS AND DILUTIONS

Sample ID	Method	Analyte	Result	Detect Flag	Units	NJDEP Impact to GW Soil Screening level (mg/kg)	Flag
EF-B19-17.5	SW6010	ANTIMONY	5.2	N	mg/kg	4	RL exceeds
EF-B19-17.5	SW6010	THALLIUM	5.2	N	mg/kg	3	RL exceeds
EF-B19-17.5X	SW6010	ANTIMONY	5.5	N	mg/kg	4	RL exceeds
EF-B19-17.5X	SW6010	THALLIUM	5.5	N	mg/kg	3	RL exceeds
EF-B19-22.5	SW6010	THALLIUM	3.8	N	mg/kg	3	RL exceeds
EF-B20-17.0	SW6010	THALLIUM	3.6	N	mg/kg	3	RL exceeds
EF-B21-17.5	SW6010	ANTIMONY	4.7	N	mg/kg	4	RL exceeds
EF-B21-17.5	SW6010	THALLIUM	4.7	N	mg/kg	3	RL exceeds
EF-B22-17.5	SW6010	ANTIMONY	6.4	N	mg/kg	4	RL exceeds
EF-B22-17.5	SW6010	THALLIUM	6.4	N	mg/kg	3	RL exceeds

MS/MSD Summary (SPIKED SAMPLE EF-B19-22.5)

METAL	SPIKED SAMPLE RESULT (MG/KG)	SAMPLE RESULT (MG/KG)	SPIKE ADDED (MG/KG)	%R	ACTIONS
Antimony	37.64	3.8U	95.7	39	**J/UJ all soil antimony results in this SDG**
Chromium	61.26	20.5	38.3	106	OK
Nickel	108.6	17.8	95.7	95	OK
Thallium	373.0	3.8U	383	97	OK
Vanadium	123.4	31.4	95.7	96	OK

MS/MSD Summary (SPIKED SAMPLE EF-B22-22.5)

METAL	SPIKED SAMPLE RESULT (MG/KG)	SAMPLE RESULT (MG/KG)	SPIKE ADDED (MG/KG)	%R	ACTION
Antimony	28.82	2.8U	69.5	41	**J/UJ all soil antimony results in this SDG**
Chromium	42.89	15.7	27.8	98	OK
Nickel	81.10	15.9	69.5	94	OK
Thallium	272.9	2.8U	278	98	OK
Vanadium	84.85	19.2	69.5	94	OK

FIELD DUPLICATE SUMMARY (EF-B19-17.5/ EF-B19-17.5X)

Method	Matrix	Analyte	Sample	Result	RDL	Dup Sample	Dup Result	Dup RDL	Unit	RPD (%)	RPD Status
SW6010	SO	NICKEL	EF-B19-17.5	18 J	20.8	EF-B19-17.5X	22.6	21.9	mg/kg	22.7	OK @35
SW6010	SO	THALLIUM	EF-B19-17.5	5.2 U	5.2	EF-B19-17.5X	5.5 U	5.5	mg/kg		Both ND
SW6010	SO	ANTIMONY	EF-B19-17.5	5.2 U	5.2	EF-B19-17.5X	5.5 U	5.5	mg/kg		Both ND
SW6010	SO	CHROMIUM	EF-B19-17.5	25	5.2	EF-B19-17.5X	29.7	5.5	mg/kg	17.2	OK @35
SW6010	SO	VANADIUM	EF-B19-17.5	35.4	26	EF-B19-17.5X	42.8	27.4	mg/kg	18.9	OK @35

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Data Validation Report

Project	PPG – GA EF	Page 1
Laboratory	Test America, NJ	
Laboratory Job No.	460-25599	
Analysis/Method	TAL Metals (Limited – Sb, Cr, Ni, Tl, V) SW-846 3050B/6010B/7471A	
Validation Level	QC Summary Review (Limited)	
Site Location/Address	Garfield Avenue, Soil RI, Site 114, Jersey City, NJ	
AECOM Project Number	60154801.0007	
Prepared by Sharon McKechnie/AECOM	Completed on: May 31, 2011	
Reviewed by Lisa Krowitz/AECOM	File Name: 2011-05-31 TAL Metals DV Report 460-25599 F.docx	

Introduction

The results of quality control data analyzed with site samples were used to assess the overall reliability of the data. The following qualifiers were used to identify data quality issues:

U: Indicates the analyte was not detected in the sample above the sample reporting limit.

J: Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

UJ: Indicates the analyte was not detected above the reporting limit and the reporting limit was approximate.

R: The sample result was rejected due to serious deficiencies; the presence or absence of the analyte could not be confirmed.

Sample Information

The samples listed below were collected by AECOM on April 20, 2011 as part of the Garfield Avenue Soil RI sampling task at PPG Site 114, Jersey City, New Jersey.

Field ID	Laboratory ID	Matrix	Fraction
EF-B18-6.0	460-25599-1	Soil	TAL Metals
EF-B18-11.5	460-25599-3	Soil	TAL Metals
EF-B18-17.5	460-25599-7	Soil	TAL Metals
EF-B18-22.5	460-25599-8	Soil	TAL Metals
EF-B17-6.0	460-25599-9	Soil	TAL Metals

Field ID	Laboratory ID	Matrix	Fraction
EF-B17-12.0	460-25599-11	Soil	TAL Metals
EF-B17-12.0X (Field duplicate of EF-B17-12.0)	460-25599-12	Soil	TAL Metals
EF-B17-17.0	460-25599-13	Soil	TAL Metals
EF-B17-22.5	460-25599-14	Soil	TAL Metals
EF-B31-7.5	460-25599-16	Soil	TAL Metals
EF-B31-12.5	460-25599-18	Soil	TAL Metals
EF-B31-18.0	460-25599-21	Soil	TAL Metals
EF-B31-22.0	460-25599-22	Soil	TAL Metals
EF-B29-2.5	460-25599-25	Soil	TAL Metals
EF-B28-2.5	460-25599-29	Soil	TAL Metals
EF-B27-2.5	460-25599-33	Soil	TAL Metals
EF-B30-2.5	460-25599-37	Soil	TAL Metals
EB042011 (Equipment blank collected 4/20/11)	460-25599-39	Aqueous	TAL Metals

Soil samples were collected following the procedures detailed in the Approved Remedial Investigation Work Plan-Soil Non-Residential Chromate Production Waste Sites 114, 132, 133, 135, 137, 143, and 186 (March 2011).

General Comments

The data package was complete. Quality control (QC) issues identified during validation are discussed below. Selected results were qualified as estimated for certain QC nonconformances. Refer to the Target Analyte Summary Hit List for a listing of all detected results, qualified results, and associated qualifications, where applicable.

Matrix Spike Results

Some matrix spike/matrix spike duplicates (MS/MSD) for mercury, aqueous metals, and solid metals batches were performed on non-site specific samples or samples from other SDGs. No actions were taken for MS and/or MSD nonconformances from non-site specific samples due to potential differences in the sample matrices. Refer to Attachments A and B for the MS/MSD nonconformances and qualified results.

Sample Reporting Limits

Selected soil and/or aqueous reporting limits exceeded the NJDEP Default Impact to GW Soil Screening Levels and/or NJDEP Specific GW Quality Criteria, respectively: The non-detect results with reporting limits that exceeded the NJDEP standards are presented in the attached Data Validation Report Form.

Data Quality and Recommendations

In general, these data appear to be valid and may be used for decision-making purposes. With the exception of the qualified results, all TAL metals results were accepted as reported by the laboratory.

Attachments

Attachment A Target Analyte Summary Hitlist(s)

Attachment B Data Validation Report Form

Attachment A

Target Analyte Summary Hitlist(s)

Soil Target Analyte Summary Hit List

Site Name Garfield Avenue Soil RI, Site 114, Jersey City, NJ
Sampling Date April 20, 2011
Lab Name/ID Test America, Edison, NJ
SDG No 460-25599
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID EB042011

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
EF-B17-12.0	460-25599-11	ANTIMONY	U	U	U	2.5	Qualify	15
EF-B17-12.0	460-25599-11	CHROMIUM	U	12.5	12.5	2.5		
EF-B17-12.0	460-25599-11	NICKEL	U	11.1	11.1	10		
EF-B17-12.0	460-25599-11	VANADIUM	U	16.3	16.3	12.5		
EF-B17-12.0X	460-25599-12	ANTIMONY	U	U	U	2.4	Qualify	15
EF-B17-12.0X	460-25599-12	CHROMIUM	U	11.1	11.1	2.4		
EF-B17-12.0X	460-25599-12	NICKEL	U	10.3	10.3	9.7		
EF-B17-12.0X	460-25599-12	VANADIUM	U	17.0	17.0	12.1		
EF-B17-17.0	460-25599-13	ANTIMONY	U	U	U	5.7	Qualify	15
EF-B17-17.0	460-25599-13	CHROMIUM	U	42.9	42.9	5.7		
EF-B17-17.0	460-25599-13	NICKEL	U	36.1	36.1	22.7		
EF-B17-17.0	460-25599-13	VANADIUM	U	47.1	47.1	28.4		
EF-B17-22.5	460-25599-14	ANTIMONY	U	U	U	3.9	Qualify	15
EF-B17-22.5	460-25599-14	CHROMIUM	U	17.7	17.7	3.9		
EF-B17-22.5	460-25599-14	NICKEL	U	13.8	13.8	15.8		
EF-B17-22.5	460-25599-14	VANADIUM	U	19.6	19.6	19.7		
EF-B17-6.0	460-25599-9	ANTIMONY	U	1.9	1.9	2.6	Qualify	15
EF-B17-6.0	460-25599-9	CHROMIUM	U	14.3	14.3	2.6		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
EF-B17-6.0	460-25599-9	NICKEL	U	15.1	15.1	10.5		
EF-B17-6.0	460-25599-9	VANADIUM	U	24.6	24.6	13.2		
EF-B18-11.5	460-25599-3	ANTIMONY	U	U	U	2.5	Qualify	15
EF-B18-11.5	460-25599-3	CHROMIUM	U	14.4	14.4	2.5		
EF-B18-11.5	460-25599-3	NICKEL	U	14.3	14.3	10.1		
EF-B18-11.5	460-25599-3	VANADIUM	U	16.9	16.9	12.6		
EF-B18-17.5	460-25599-7	ANTIMONY	U	U	U	2.3	Qualify	15
EF-B18-17.5	460-25599-7	CHROMIUM	U	14.2	14.2	2.3		
EF-B18-17.5	460-25599-7	NICKEL	U	10.7	10.7	9.2		
EF-B18-17.5	460-25599-7	VANADIUM	U	24.2	24.2	11.5		
EF-B18-22.5	460-25599-8	ANTIMONY	U	U	U	2.4	Qualify	15
EF-B18-22.5	460-25599-8	CHROMIUM	U	10.2	10.2	2.4		
EF-B18-22.5	460-25599-8	NICKEL	U	12.0	12.0	9.5		
EF-B18-22.5	460-25599-8	VANADIUM	U	12.6	12.6	11.8		
EF-B18-6.0	460-25599-1	ANTIMONY	U	U	U	2.3	Qualify	15
EF-B18-6.0	460-25599-1	CHROMIUM	U	16.0	16.0	2.3		
EF-B18-6.0	460-25599-1	NICKEL	U	33.3	33.3	9.3		
EF-B18-6.0	460-25599-1	VANADIUM	U	28.3	28.3	11.6		
EF-B27-2.5	460-25599-33	ANTIMONY	U	U	U	2.3	Qualify	15
EF-B27-2.5	460-25599-33	CHROMIUM	U	6.6	6.6	2.3		
EF-B27-2.5	460-25599-33	NICKEL	U	2.4	2.4	9.2		
EF-B27-2.5	460-25599-33	VANADIUM	U	15.3	15.3	11.5		
EF-B28-2.5	460-25599-29	ANTIMONY	U	2.3	2.3	2.2	Qualify	15
EF-B28-2.5	460-25599-29	CHROMIUM	U	1090	1090	2.2		
EF-B28-2.5	460-25599-29	NICKEL	U	88.5	88.5	8.7		
EF-B28-2.5	460-25599-29	VANADIUM	U	66.7	66.7	10.9		
EF-B29-2.5	460-25599-25	ANTIMONY	U	U	U	2.3	Qualify	15
EF-B29-2.5	460-25599-25	CHROMIUM	U	11.6	11.6	2.3		

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
EF-B29-2.5	460-25599-25	NICKEL	U	7.6	7.6	9.2		
EF-B29-2.5	460-25599-25	VANADIUM	U	18.8	18.8	11.5		
EF-B30-2.5	460-25599-37	ANTIMONY	U	U	U	3.5	Qualify	15
EF-B30-2.5	460-25599-37	NICKEL	U	343	343	14.1		
EF-B30-2.5	460-25599-37	VANADIUM	U	844	844	17.6		
EF-B30-2.5	460-25599-37	CHROMIUM	U	11100	11100	17.6		
EF-B31-12.5	460-25599-18	ANTIMONY	U	U	U	16.8	Qualify	15
EF-B31-12.5	460-25599-18	NICKEL	U	650	650	67.0		
EF-B31-12.5	460-25599-18	VANADIUM	U	286	286	83.8		
EF-B31-12.5	460-25599-18	CHROMIUM	U	38900	38900	83.8		
EF-B31-18.0	460-25599-21	ANTIMONY	U	U	U	16.4	Qualify	15
EF-B31-18.0	460-25599-21	NICKEL	U	710	710	65.6		
EF-B31-18.0	460-25599-21	VANADIUM	U	250	250	82.0		
EF-B31-18.0	460-25599-21	CHROMIUM	U	40400	40400	82.0		
EF-B31-22.0	460-25599-22	ANTIMONY	U	U	U	2.2	Qualify	15
EF-B31-22.0	460-25599-22	CHROMIUM	U	21.9	21.9	2.2		
EF-B31-22.0	460-25599-22	NICKEL	U	8.5	8.5	8.7		
EF-B31-22.0	460-25599-22	VANADIUM	U	16.3	16.3	10.8		
EF-B31-7.5	460-25599-16	ANTIMONY	U	U	U	14.8	Qualify	15
EF-B31-7.5	460-25599-16	CHROMIUM	U	12800	12800	14.8		
EF-B31-7.5	460-25599-16	NICKEL	U	174	174	59.2		
EF-B31-7.5	460-25599-16	VANADIUM	U	145	145	74.0		

Note: The “U” under Method Blank column indicates a nondetect result
The “U” under the Laboratory Sample Result and Validation Sample Result columns indicate a nondetect result at the RL.

NJ DEP Hitlist Footnotes:

1) The value reported is less than or equal to 3x the value in the method blank. It is the policy of NJDEP-DPFSR to negate the reported value due to probable foreign contamination unrelated to the actual sample. The end-user, however, is alerted that a reportable quantity of the analyte was detected.

2) The value reported is greater than three (3) but less than ten (10) times the value in the method blank and is considered "real". However, the reported value must be quantitatively qualified "J" due to the method blank contamination. The "B" qualifier alerts the end-user to the presence of this analyte in the method blank.

3) The value reported is less than or equal to 3x the value in the trip/field blank. It is the policy of NJDEP-DPFSR to negate the reported value as due to probable foreign contamination unrelated to the actual sample. The end-user, however, is alerted that a reportable quantity of the analyte was detected.

4.) The value reported is greater than 3x but less than ten (10) the value in the trip/field blank and is considered "real". However, the reported value must be quantitatively qualified "J" due to trip/field blank contamination.

5.) The concentration reported by the laboratory is incorrectly calculated.

6.) The laboratory failed to report the presence of the analyte in the sample.

7.) The reported metal value was qualified because the Calibration Verification Standard was not within the recovery range (90-110 percent).

8) In the MS/MSD Sample Analysis, this analyte fell outside the control limits of 20% RPD. Therefore, the result was qualified.

9.) This analyte was qualified because the laboratory performed the MS/MSD Analysis on a field blank.

10) The reported analyte was qualified because the associated Calibration Blank result was greater than the MDL.

11) The reported value was qualified because serial dilution analysis was not within QC limit of 10% D.

12) This analyte is rejected because the laboratory exceeded the holding time for digestion and analysis.

13) The laboratory subtracted the method blank from the sample result. The reviewer's calculation has added the method blank result to the reported concentration.

14) The photocopy submitted is illegible. Therefore, the QA reviewer cannot read the laboratory's reported concentration result.

15) The reported or nondetected value was qualified because the MS/MSD spike recovery was less than 75 percent.

16) The reported value was qualified because the MS/MSD spike recovery was greater than 125 percent.

17) The non-detected value was qualified (UJ) because the MS/MSD spike recovery was less than 75 percent. The possibility of a false negative exists.

18) In the field duplicate analysis this analyte fell outside of the RPD control limits. Therefore, the result was qualified.

19) The laboratory failed to analyze an MS/MSD for the particular matrix. Therefore, the result was rejected.

20) The reported or nondetect value was qualified with an uncertain bias because the MS %R and MSD %R had opposing biases.

21) In the soil laboratory duplicate analysis this analyte fell outside of the control limits of 35% RPD. Therefore, the result was qualified.

22) The reported or nondetected value was rejected because the MS/MSD spike recovery was less than 10 percent.

23) The reported analyte was qualified (J) because the associated sample result was greater than the MDL but less than the RL.

24) The reported value was qualified because the percent solids was <50%

Attachment B

Data Validation Report Form

Client Name: PPG Industries	**Project Number:** 60154801-0007
Site Location: PPG- Garfield Avenue Soil RI, Site 114, Jersey City, NJ	**Project Manager:** Robert Cataldo
Laboratory: Test America, New Jersey	**Limited or Full Validation (circle one)**
Laboratory Job No: 460-25599	**Date Checked:** 5/31/2011
Validator: Sharon McKechnie	**Peer Review:** Lisa Krowitz

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	X			
Reporting Limits met project requirements?	X	X*		*See attached table "Dilutions and Reporting Limits". Elevated reporting limits due to sample dilutions.
Field I.D. included?	X			
Laboratory I.D. included?	X			
Sample matrix included?	X			
Sample receipt temperature 2-6ºC?	X			2.9, 2.3ºC
Signed COCs included?	X			
Date of sample collection included?	X			Collected 4/20/2011
Date of sample digestion included?	X			
Date of analysis included?	X			
Holding time met QC criteria? Metals -180 days from sample collection Mercury – 28 days from sample collection If HT exceeded by - ≤ 10 days, J/UJ all results - > 10 days, R all results	X			See attached table "Hold Times"
Method reference included?	X			
Laboratory Case Narrative included?	X			
Sample Dilutions	X			See attached table "Dilutions and Reporting Limits""
Field Duplicates ("x "appended to sample ID) (RPD calculation on separate sheet)	X			EF-B17-12.0/ EF-B17-12.0X
Definitions: MDL – Method Detection Limit; %R – Percent Recovery; RL – Reporting Limit; RPD – Relative Percent Difference; RSD – Relative Standard Deviation :Corr – Correlation Coefficient.				
Comments				

QA/QC CHECKLIST FOR TAL METALS ANALYSIS

ITEM	YES	NO	N/A	COMMENTS
Initial Calibration Documentation Included in Lab Package?			X	**Not reviewed for limited validation**
1. Calibrate daily or each time instrument is set up?. If no, reject (R) data. 2. ICP (6010) - Blank plus 1standard? If no, reject (R) data. 3. Hg (7470/7471) – Blank plus 5 standards? If no, reject (R) data.				
Initial Calibration Verification Standard (ICV) for ICP (6010) and Initial Calibration Check Standard (ICCS) for Hg (7470/7471) Included in Lab Package?			X	**Not reviewed for limited validation**
1. Analyzed immediately after initial calibration? If no, reject (R) data. 2. %R criteria met? (90 - 110%). If no, J positive results for affected analyte(s) if %R between 80-89% and 111-120% and indicate bias UJ non-detect results for affected analyte(s) if R% between 80-89% R all data for affected analyte(s) if <80% or >120% 3. Spot check ICV/ICCS results for several analytes				
Continuing Calibration Verification Standard (CCV) for ICP (6010) and Calibration Check Standard (CCS) for Hg (7470/7471) included in Lab Package?			X	**Not reviewed for limited validation**
1. Analyzed immediately after each ICV/ICC/CB and after every 10 samples? If no, reject (R) data. 2. CCS and CCV from independent source and at mid level of calibration curve. If no, reject (R) data. 3. %R criteria met? (90 - 110%) If no, J positive results for affected analyte(s) if %R between 80-89% and 111-120% and indicate bias UJ non-detect results for affected analyte(s) if %R between 80-89% R all data for affected analyte(s) if %R <80% or >120% 4. Spot check CCV/CCS results for several analytes				
Low Calibration Standard (CRI) included in Lab Package?			X	**Not reviewed for limited validation**
1. %R criteria met? - 50 - 150% for Co, Mn, Zn by ICP-MS, PB, Tl by 6010) - 70-130% all others If no, refer to ILM05.4 NJ SOP 5.A.2 for actions.				
Calibration Blanks			X	**Not reviewed for limited validation**
1. Analyzed immediately after daily calibration and after each ICV/ICC/CCV/CCS, and after every 10 samples? If no, reject (R) data. 2. Absolute value ≤ 3xIDL? If no, - if sample result ≤ 10xCB result, qualify affected analyte(s) in associated samples with CB - if sample result > 10xCB result, no qualification				
Method Blank included in Lab Package?	X			
1, Method blank analyzed with each preparation batch or every SDG, or 1/20 samples? If no, reject (R) data, except no aqueous MB required for FB/EB if only soil samples were analyzed. 2. Method blank analyzed 1/20 samples? If – MB 1/25, J sample results from 21-25 – MB > 1/25, R sample results after 25th sample 3. MB result nondetect? If no, - Sample result ≤ 3xMB, negate UB - Sample result <3xMB, but ≤10xMB, JB - Sample result > 10xMB, no qualification 4. Negative MB result reported? If yes, -Positive sample result ≤ 10xMB, qualify estimated, biased low (J) -Non-detect sample result, qualify UJ, may be false non-detect				1. Yes 2. 1/ batch 3. Yes 4.No
Field Blanks/Equipment Blanks included in Lab Package?	X			**Blanks apply to samples collected during same week as blank**
1, FB/EB result nondetect? If no, - Sample result ≤ 3xFB/EB, negate U - Sample result <3xFB/EB, but ≤10xFB/EB, J - Sample result > 10xFB/EB, no qualification				EB042011, all ND

ITEM	YES	NO	N/A	COMMENTS
ICP Interference Check Sample (ICS) included in Lab Package?			X	**Not reviewed for limited validation**
1. Analyzed at beginning of analytical run? If no, reject (R) data. 2. %R criteria met? (80-120%) If no, %R > 120%, no qualification if sample result non-detect %R between 121-150%, J positive results, biased high %R between 50-79%, J/UJ results, biased low %R <50% or >150%, reject (R) result 3. Spot check accuracy of %Rs				
Matrix Spike/Matrix Spike Duplicate Data Included in Lab Package?	X			**MSD also used as laboratory duplicate QC**
1. MS/MSD %R (75-125%R) and RPD (± 20%) criteria met? - %R >125% J positive results for affected analyte(s) for all samples in the same batch/SDG, accept NDs. - %R <75% J/UJ for affected analyte(s) for all samples in the same batch/SDG – RPD outside ± 20% J positive results for affected analyte(s) for all samples in the same batch/SDG, accept NDs. 2. Was a sample spiked at the frequency of 1/batch or 20 samples? 3, Was the MS performed on a site sample? 4. Was the MS performed on a FB/EB or TB? If yes, J all sample data.		X		1. Some MS %R nonconformances. Refer to MS/MSD Summary Table for nonconformances. 2.Frequency OK 3. Spiked non site samples will not be applied 4.NA
Serial Dilution			X	**Not reviewed for limited validation**
1. %D (≤ 10%R) criteria met? – If analyte concentration > 25xIDL (7000) or > 10x IDL (6010) and %D > 10% J positive results for affected analyte(s) for all samples in the same batch/SDG, accept NDs. 2. Was the frequency 1/batch or 20 samples? 3, Was a site sample used? 4. Was a FB/EB or TB used? If yes, J all sample data. **5.** Spot check accuracy of %Ds				
Post Digestion Spike			X	**Not reviewed for limited validation**
1. %R criteria met? (75-125%R). - %R >125% J positive results for affected analyte(s) for all samples in the same batch/SDG, accept NDs. - %R <75% J/UJ affected analyte(s) for all samples in the same batch/SDG. 2. Was the spike performed on a FB/EB or TB? If yes, J all sample data? 3. Was a sample spiked at the frequency of 1/batch or 20 samples?				
Laboratory Control Sample Data Included in Lab Package?	X			
1. LCS %R (80-120%R) criteria met? If no, J/UJ all affected analyte(s) for all samples in the same batch/SDG. data. 2. Was a sample spiked at the frequency of 1/batch or 20 samples? If no, J/UJ affected analyte(s) for all sample in the same batch/SDG.				1. Yes 2. 1/batch
Laboratory Duplicate Data Included in Lab Package?	X			
Aqueous If RPD is >20% but <100% and sample and field duplicate results are >5x the QL, estimate (J) results > the QL. If RPD is >100%, reject (R) results ≥ the QL. If sample and/or duplicate is <5x the QL and absolute difference is > the QL, estimate (J) positive results <5x the QL and nondetects (UJ). If absolute difference is > 2x the QL, reject (R) non detects and positive results <5x the QL. SOIL: If RPD is >35% but <120% and sample and field duplicate results are >5x the QL, estimate (J) results > the QL. If RPD is > 120%, reject (R) results > the QL. If sample and/or duplicate is <5x the QL and absolute difference is >2x the QL, estimate (J) positive results <5x QL and nondetects (UJ). If absolute difference is >4x the QL, reject (R) non detects and positive results <5x QL.	X X			All met criteria

ITEM	YES	NO	N/A	COMMENTS
Field Duplicate Data Included in Lab Package?	X			
Aqueous If RPD is >20% but <100% and sample and field duplicate results are >5x the QL, estimate (J) results > the QL. If RPD is >100%, reject (R) results ≥ the QL. If sample and/or duplicate is <5x the QL and absolute difference is > the QL, estimate (J) positive results <5x the QL and nondetects (UJ). If absolute difference is > 2x the QL, reject (R) non detects and positive results <5x the QL. SOIL: If RPD is >35% but <120% and sample and field duplicate results are >5x the QL, estimate (J) results > the QL. If RPD is > 120%, reject (R) results > the QL. If sample and/or duplicate is <5x the QL and absolute difference is >2x the QL, estimate (J) positive results <5x QL and nondetects (UJ). If absolute difference is >4x the QL, reject (R) non detects and positive results <5x QL.				EF-B17-12.0/ EF-B17-12.0X See “Field Duplicate Summary Table” below

Hold Times

Sample ID	Matrix	Analysis Method	Sample Date	Prep Date	Analysis Date	Sample To Prep	Prep To Analysis	Sample To Analysis	Status
EB042011	WQ	SW6010	4/20/2011 15:00	4/28/2011 11:12	4/28/2011 19:40	8	0	8	OK @180 days
EF-B17-12.0	SO	SW6010	4/20/2011 10:30	4/27/2011 18:15	4/29/2011 0:38	7	2	9	OK @180 days
EF-B17-12.0X	SO	SW6010	4/20/2011 10:32	4/27/2011 18:15	4/29/2011 0:42	7	2	9	OK @180 days
EF-B17-17.0	SO	SW6010	4/20/2011 10:40	4/27/2011 18:15	4/29/2011 0:45	7	2	9	OK @180 days
EF-B17-22.5	SO	SW6010	4/20/2011 10:45	4/27/2011 18:15	4/29/2011 0:49	7	2	9	OK @180 days
EF-B17-6.0	SO	SW6010	4/20/2011 10:17	4/27/2011 18:15	4/29/2011 0:34	7	2	9	OK @180 days
EF-B18-11.5	SO	SW6010	4/20/2011 9:05	4/27/2011 18:15	4/29/2011 0:12	7	2	9	OK @180 days
EF-B18-17.5	SO	SW6010	4/20/2011 9:25	4/27/2011 18:15	4/29/2011 0:31	7	2	9	OK @180 days
EF-B18-22.5	SO	SW6010	4/20/2011 9:30	4/27/2011 18:15	4/28/2011 23:57	7	1	8	OK @180 days
EF-B18-6.0	SO	SW6010	4/20/2011 8:55	4/27/2011 18:15	4/29/2011 0:08	7	2	9	OK @180 days
EF-B27-2.5	SO	SW6010	4/20/2011 14:10	4/27/2011 18:15	4/29/2011 1:23	7	2	9	OK @180 days
EF-B28-2.5	SO	SW6010	4/20/2011 10:00	4/27/2011 18:15	4/29/2011 1:19	7	2	9	OK @180 days
EF-B29-2.5	SO	SW6010	4/20/2011 8:30	4/27/2011 18:15	4/29/2011 1:16	7	2	9	OK @180 days
EF-B30-2.5	SO	SW6010	4/20/2011 15:00	4/27/2011 18:15	4/29/2011 1:27	7	2	9	OK @180 days
EF-B30-2.5	SO	SW6010	4/20/2011 15:00	4/27/2011 18:15	4/29/2011 12:49	7	2	9	OK @180 days
EF-B31-12.5	SO	SW6010	4/20/2011 12:55	4/27/2011 18:15	4/29/2011 0:56	7	2	9	OK @180 days
EF-B31-12.5	SO	SW6010	4/20/2011 12:55	4/27/2011 18:15	4/29/2011 10:46	7	2	9	OK @180 days
EF-B31-18.0	SO	SW6010	4/20/2011 13:15	4/27/2011 18:15	4/29/2011 1:08	7	2	9	OK @180 days
EF-B31-18.0	SO	SW6010	4/20/2011 13:15	4/27/2011 18:15	4/29/2011 10:50	7	2	9	OK @180 days
EF-B31-22.0	SO	SW6010	4/20/2011 13:20	4/27/2011 18:15	4/29/2011 1:12	7	2	9	OK @180 days
EF-B31-7.5	SO	SW6010	4/20/2011 12:45	4/27/2011 18:15	4/29/2011 0:53	7	2	9	OK @180 days

REPORTING LIMITS AND DILUTIONS

Sample ID	Method	Analyte	Result	Detect Flag	Units	NJDEP Impact to GW Soil Screening level (mg/kg)	Flag
EF-B17-17.0	SW6010	ANTIMONY	5.7	N	mg/kg	4	RL exceeds
EF-B17-17.0	SW6010	THALLIUM	5.7	N	mg/kg	3	RL exceeds
EF-B17-22.5	SW6010	THALLIUM	3.9	N	mg/kg	3	RL exceeds
EF-B30-2.5	SW6010	THALLIUM	3.5	N	mg/kg	3	RL exceeds
EF-B31-12.5	SW6010	ANTIMONY	16.8	N	mg/kg	4	RL exceeds
EF-B31-12.5	SW6010	THALLIUM	16.8	N	mg/kg	3	RL exceeds
EF-B31-18.0	SW6010	ANTIMONY	16.4	N	mg/kg	4	RL exceeds
EF-B31-18.0	SW6010	THALLIUM	16.4	N	mg/kg	3	RL exceeds
EF-B31-7.5	SW6010	ANTIMONY	14.8	N	mg/kg	4	RL exceeds
EF-B31-7.5	SW6010	THALLIUM	14.8	N	mg/kg	3	RL exceeds

MS/MSD Summary (SPIKED SAMPLE EF-B18-22.5)

METAL	SPIKED SAMPLE RESULT (MG/KG)	SAMPLE RESULT (MG/KG)	SPIKE ADDED (MG/KG)	%R	ACTION
Chromium	32.65	10.2	23.6	95	OK
Nickel	67.62	12.0	59.1	94	OK
Antimony	43.52	2.4U	59.1	74	**J/UJ all solid antimony results in this SDG**
Thallium	232.1	2.4U	236	98	OK
Vanadium	66.46	12.6	59.1	91	OK

FIELD DUPLICATE SUMMARY (EF-B17-12.0/ EF-B17-12.0X)

Analyte	Sample	Result (mg/kg)	RDL	Dup Sample	Dup Result (mg/kg)	Dup RDL	Unit	RPD (%)	RPD Status
NICKEL	EF-B17-12.0	11.1	10	EF-B17-12.0X	10.3	9.7	mg/kg	7.5	OK @35
THALLIUM	EF-B17-12.0	2.5 U	2.5	EF-B17-12.0X	2.4 U	2.4	mg/kg		Both ND
ANTIMONY	EF-B17-12.0	2.5 U	2.5	EF-B17-12.0X	2.4 U	2.4	mg/kg		Both ND
CHROMIUM	EF-B17-12.0	12.5	2.5	EF-B17-12.0X	11.1	2.4	mg/kg	11.9	OK @35
VANADIUM	EF-B17-12.0	16.3	12.5	EF-B17-12.0X	17	12.1	mg/kg	4.2	OK @35

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Data Validation Report

Project	PPG – GA EF	Page	1
Laboratory	TestAmerica, NJ		
Laboratory Job No.:	460-25599		
Analysis/Method:	Hexavalent Chromium SW846 3060A/7196A (including pH and Eh)		
Validation Level:	Full		
Site Location/Address:	Garfield Avenue Soil RI, Site 114, Jersey City, NJ		
AECOM Project Number:	60154801-0007		
Prepared by: Justin Webster/AECOM	Completed on: June 1, 2011		
Reviewed by: Lisa Krowitz/AECOM	File Name: 2011-06-01 Hex Cr DV Report 460-25599-F.docx		

Introduction

The results of quality control data analyzed with site samples were used to assess the overall reliability of the data. The following qualifiers were used to identify data quality issues:

U: Indicates the analyte was not detected in the sample above the sample reporting limit

J: Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample ("J-" indicates low bias "J+" indicates high bias)

UJ: Indicates the analyte was not detected above the reporting limit and the reporting limit was approximate.

R: The sample result was rejected due to serious deficiencies; the presence or absence of the analyte could not be confirmed.

Sample Information

The samples listed below were collected by AECOM on April 20, 2011 as part of the Garfield Avenue Soil RI sampling at PPG Site 114, Jersey City, New Jersey.

Field ID	Laboratory ID	Matrix	Fraction
EF-B18-6.0	460-25599-1	Soil	Hexavalent Chromium
EF-B18-10.0	460-25599-2	Soil	Hexavalent Chromium
EF-B18-15.0	460-25599-4	Soil	Hexavalent Chromium
EF-B18-16.0	460-25599-5	Soil	Hexavalent Chromium
EF-B18-16.0X (field duplicate)	460-25599-6	Soil	Hexavalent Chromium
EF-B18-17.5	460-25599-7	Soil	Hexavalent Chromium
EF-B18-22.5	460-25599-8	Soil	Hexavalent Chromium
EF-B17-6.0	460-25599-9	Soil	Hexavalent Chromium
EF-B17-10.0	460-25599-10	Soil	Hexavalent Chromium
EF-B17-12.0	460-25599-11	Soil	Hexavalent Chromium
EF-B17-12.0X (field duplicate)	460-25599-12	Soil	Hexavalent Chromium
EF-B17-17.0	460-25599-13	Soil	Hexavalent Chromium
EF-B17-22.5	460-25599-14	Soil	Hexavalent Chromium
EF-B31-6.0	460-25599-15	Soil	Hexavalent Chromium
EF-B31-7.5	460-25599-16	Soil	Hexavalent Chromium
EF-B31-10.0	460-25599-17	Soil	Hexavalent Chromium
EF-B31-12.5	460-25599-18	Soil	Hexavalent Chromium
EF-B31-14.0	460-25599-19	Soil	Hexavalent Chromium
EF-B31-16.0	460-25599-20	Soil	Hexavalent Chromium
EF-B31-18.0	460-25599-21	Soil	Hexavalent Chromium
EF-B31-22.0	460-25599-22	Soil	Hexavalent Chromium
EF-B29-0.8	460-25599-23	Soil	Hexavalent Chromium
EF-B29-2.0	460-25599-24	Soil	Hexavalent Chromium
EF-B29-4.0	460-25599-26	Soil	Hexavalent Chromium
EF-B28-0.8	460-25599-27	Soil	Hexavalent Chromium
EF-B28-2.0	460-25599-28	Soil	Hexavalent Chromium
EF-B28-4.0	460-25599-30	Soil	Hexavalent Chromium
EF-B27-1.2	460-25599-31	Soil	Hexavalent Chromium
EF-B27-2.0	460-25599-32	Soil	Hexavalent Chromium
EF-B27-4.0	460-25599-34	Soil	Hexavalent Chromium
EF-B30-0.7	460-25599-35	Soil	Hexavalent Chromium
EF-B30-2.0	460-25599-36	Soil	Hexavalent Chromium
EF-B30-4.0	460-25599-38	Soil	Hexavalent Chromium
EB-042011 (field blank)	460-25599-39	Aqueous	Hexavalent Chromium

The samples were collected following the procedures detailed in the NJDEP – Approved Remedial Investigation Work Plan – Soil Non-Residential Chromate Chemical Production Waste Sites 114, 132, 133, 135, 137, 143, and 189 (March 2011).

General Comments

The data package was complete. Quality control (QC) issues identified during validation are discussed below. Refer to the Soil Target Analyte Summary Hit List for a listing of all detected results, qualified results, and associated qualifications, where applicable.

Matrix Spike Results

Soil sample EF-B30-2.0 was selected for soluble and insoluble matrix spike analysis for the first set of samples. The analysis batch 73066 soluble and insoluble matrix spike recoveries were 101% and 98%, respectively, which met quality control criteria of 75-125%R. The post spike result for batch 72611 was recovered at 98%. Since all quality control requirements were met, no data qualifications were required for the samples associated with batch 73066.

Soil sample EF-B18-22.5 was selected for soluble and insoluble matrix spike analysis for the second set of samples. The initial analysis (batch 73150) soluble and insoluble matrix spike recoveries were

55% and 86%, respectively, which did not meet quality control criteria of 75-125%R. The post spike result for the initial analysis (73150) was recovered at 102%. Since the initial soluble spike recovery did not meet acceptable criteria, the laboratory performed a re-extraction and re-analysis for all samples associated with this initial batch 73150 under batch 73560.

The re-analysis (batch 73560) soluble and insoluble matrix spike recoveries were 51% and 77%, respectively, which again did not meet the quality control criteria of 75-125%R. The post spike result for the re-analysis (73560) was recovered at 100%, which met the quality control criteria of 85% to 115%. Since the re-analysis soluble matrix spike recovery also failed to meet quality control criteria, additional parameters were analyzed to determine if possible matrix interferences could be the cause for the poor matrix spike recoveries. The samples were tested for pH and oxidative reduction potential (ORP) and plotted on an Eh/pH phase diagram chart. From this chart, source sample EF-B18-22.5 indicated a oxidizing environment capable of supporting Cr(VI).

The hexavalent chromium results for soil samples associated with batches 73150 and 73560 were reported from the initial analysis (batch 73150) since the MS %Rs from the reanalysis showed no improvement. Due to the low soluble MS %Rs and the results from the phase diagram chart indicating oxidizing matrix conditions capable of supporting hexavalent chromium results, all the samples associated with batch 73150 were qualified as estimated (J/UJ).

Field Duplicate Results

Samples EF-B18-16.0X and EF-B17-12.0X were the field duplicate samples associated with the samples in this data set. However, the relative percent differences (RPD) results for the initial analysis and re-analysis were not calculable due to a nondetect result in the original and duplicate analyses. No data qualifications were required.

Laboratory Duplicate Results

Samples EF-B30-2.0 and EF-B18-22.5 were the laboratory duplicate samples associated with the samples in this data set. The relative percent difference (RPD) results for sample EF-B30-2.0 met criteria; therefore, no qualifications were required. The initial analysis and re-analysis (RPD) results for sample EF-B18-22.5 were not calculable due to a nondetect result in the original and duplicate analyses. No data qualifications were required.

Percent Moisture

Sample EF-B17-17.0 had moisture content that exceeded the quality control criteria of greater than 50% moisture. The reported nondetect for sample EF-B17-17.0 was qualified (UJ) as estimated nondetect due to the percent moisture content exceedances.

Sample Reporting Limits

Samples EF-B04-0.5, EF-B04-2.0, and EB-041111 were qualified “J”, as estimated by the laboratory. The reported results were less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL) and; therefore, are an approximate value.

Data Quality and Recommendations

In general, these data appear to be valid. The data user should use caution when evaluating the results because of the magnitude of sample bias due to matrix interferences.

Attachments

Attachment A Target Analyte Summary Hitlist(s)

Attachment B Data Validation Report Form

Attachment C Additional QC Documentation

Attachment A

Target Analyte Summary Hitlist(s)

Soil Target Analyte Summary Hit List

Site Name PPG GAEF Site 114, Jersey City, NJ
Sampling Date April 20, 2011
Lab Name/ID Test America, Edison, NJ
SDG No 460-25599
Sample Matrix Soil
Trip Blank ID NA
Field Blank ID EB-042011

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
EB042011	460-25599-39	CHROMIUM (HEXAVALENT)	U	U	U	10.0	qualify	20
EF-B17-10.0	460-25599-10	CHROMIUM (HEXAVALENT)	U	U	U	2.6	qualify	20
EF-B17-12.0	460-25599-11	CHROMIUM (HEXAVALENT)	U	U	U	2.6	qualify	20
EF-B17-12.0X	460-25599-12	CHROMIUM (HEXAVALENT)	U	U	U	2.5	qualify	20
EF-B17-17.0	460-25599-13	CHROMIUM (HEXAVALENT)	U	U	U	5.7	qualify	20,22
EF-B17-22.5	460-25599-14	CHROMIUM (HEXAVALENT)	U	U	U	3.9	qualify	20
EF-B17-6.0	460-25599-9	CHROMIUM (HEXAVALENT)	U	U	U	2.6	qualify	20
EF-B18-10.0	460-25599-2	CHROMIUM (HEXAVALENT)	U	U	U	2.3	qualify	20
EF-B18-15.0	460-25599-4	CHROMIUM (HEXAVALENT)	U	4.7	4.7	2.6	qualify	18
EF-B18-16.0	460-25599-5	CHROMIUM (HEXAVALENT)	U	U	U	2.5	qualify	20
EF-B18-16.0X	460-25599-6	CHROMIUM (HEXAVALENT)	U	U	U	2.4	qualify	20
EF-B18-17.5	460-25599-7	CHROMIUM (HEXAVALENT)	U	U	U	2.4	qualify	20
EF-B18-22.5	460-25599-8	CHROMIUM (HEXAVALENT)	U	U	U	2.4	qualify	20
EF-B18-6.0	460-25599-1	CHROMIUM (HEXAVALENT)	U	U	U	2.3	qualify	20
EF-B27-4.0	460-25599-34	CHROMIUM (HEXAVALENT)	U	1310	1310	148		
EF-B30-0.7	460-25599-35	CHROMIUM (HEXAVALENT)	U	44.4	44.4	2.7		
EF-B30-2.0	460-25599-36	CHROMIUM (HEXAVALENT)	U	20.2	20.2	3.0		
EF-B30-4.0	460-25599-38	CHROMIUM (HEXAVALENT)	U	51500	51500	3530		
EF-B31-10.0	460-25599-17	CHROMIUM (HEXAVALENT)	U	9320	9320	804	qualify	18
EF-B31-12.5	460-25599-18	CHROMIUM (HEXAVALENT)	U	12500	12500	838	qualify	18
EF-B31-14.0	460-25599-19	CHROMIUM (HEXAVALENT)	U	10800	10800	640	qualify	18
EF-B31-16.0	460-25599-20	CHROMIUM (HEXAVALENT)	U	13800	13800	798	qualify	18

Field Sample ID	Lab Sample ID	Analyte	Method Blank (mg/kg)	Laboratory Sample Result (mg/kg)	Validation Sample Result (mg/kg)	RL (mg/kg)	Quality Assurance Decision	NJDEP Validation Footnote
EF-B31-18.0	460-25599-21	CHROMIUM (HEXAVALENT)	U	13700	13700	827	qualify	18
EF-B31-22.0	460-25599-22	CHROMIUM (HEXAVALENT)	U	0.61	0.61	2.2	qualify	13
EF-B31-6.0	460-25599-15	CHROMIUM (HEXAVALENT)	U	6750	6750	781	qualify	18
EF-B31-7.5	460-25599-16	CHROMIUM (HEXAVALENT)	U	4710	4710	312	qualify	18

Note: The “U” under Method Blank column indicates a nondetect result.
The “U” under the Laboratory Sample Result and Validation Sample Result columns indicate a nondetect result at the RL.

NJDEP Validation Footnote

13. The reported analyte was qualified because the result was greater than the MDL but below the RL.

18. The reported value was qualified (J) because the predigestion spike recovery was less than 75 percent.

20. The non-detected value was qualified (UJ) because the redigestion spike recovery was less than 75 percent. The possibility of a false negative exists.

22. The reported value was qualified (UJ) because the sample moisture content exceeded 50 percent.

Attachment B

Data Validation Report Form

Client Name: PPG Industries	**Project Number: 60154801-0007**
Site Location: PPG-GAEF	**Project Manager:** Robert Cataldo
Laboratory: TestAmerica, New Jersey	**Limited or Full Validation (circle one)**
Laboratory Job No: 460-25599	**Date Checked: 5/31/2011**
Validator: Justin Webster	**Peer: Lisa Krowitz**

ITEM	YES	NO	N/A	COMMENTS
Sample results included?	x			1 Aqs TB and 33 Soils
Reporting Limits met project requirements?	x			Soils - 2.2 mg/kg to 3530 mg/kg
Field I.D. included?	x			
Laboratory I.D. included?	x			
Sample matrix included?	x			
Sample receipt temperature 2-6ºC?	x			2.9°C cooler #1 and 2.3°C cooler #2;
Signed COCs included?	x	x*		Date and time of receipt were missing
Date of sample collection included?	x			4/20/11
Date of sample digestion included?	x			5/6/11 and 5/11/11
Holding time to digestion met criteria? Soils -30 days from collection to digestion.	x			See below " Holding Times"
Date of analysis included?	x			Aqs 4/21/11. Soil 5/9/11, 5/10/11, and 5/13/11
Holding time to analysis met criteria? Soils -168 hours from digestion to analysis. Aqueous – 24 hours from collection to analysis.	x			See Below "Holding Times"
Method reference included?	x			3060A/7196A
Laboratory Case Narrative included?	x			

Definitions: MDL – Method Detection Limit; %R – Percent Recovery; RL – Reporting Limit; RPD – Relative Percent Difference; RSD – Relative Standard Deviation :Corr – Correlation Coefficient.

Comments

Field Duplicates: EF-B17-12.0X and EF-B18-16.0X were selected as the field duplicates for this SDG. However, RPDs could not be calculated due to ND results for both the initial and duplicate analyses in both samples.

Sample dilutions:
EF-B27-4.0 = 50x
EF-B30-4.0 = 1000x
EF-B31-10.0 = 250x
EF-B31-12.5 = 250x
EF-B31-14.0 = 200x
EF-B31-16.0 = 250x
EF-B31-18.0 = 250x
EF-B31-6.0 = 250x
EF-B31-7.5 = 100x

ITEM	YES	NO	N/A	COMMENTS
Initial Calibration Documentation Included in Lab Package?	x			Cal source (aqs WThcrIM2-00022) (soil WThcrIM-00022 and WThcrIM 00023)
1. Blank plus 4 standards (7196A) or blank plus 3 standards (7199), 2. Correlation coefficient of ≥0.995 (7196A) or ≥0.999 (7199). 3. Calibrate daily or each time instrument is set up.	x			1. Each analysis 1 blank and 5 cal STDs 2. All analyses meet CC 3. Yes
Calibration Check Standard (CCS) for 7196A and Quality Control Sample (QCS) for 7199 Included in Lab Package?	x			Check source (aqs WThcrIM4-00024) (soils WThcrIM3-00011)
1. %R criteria met? (90 - 110%). 2. Correct frequency of once every 10 samples 3. CCS and QCS from independent source and at mid level of calibration curve.	x			1. All met %R 2. Analyzed every 10 samples 3. Yes
Calibration Blanks	x			Aqs – 460-71290/1 and Soils 460-73066/1, 460-73150/1, and 460-73560.
1. Analyzed prior to initial calibration standards and after each CCS/QCS? 2. Absolute value should not exceed MDL.	x			1. Yes 2. Yes
Method Blank and Field Blanks Included in Lab Package?	x			Field blank included with this SDG EB-042011 and was ND
1. Method blank analyzed with each preparation batch? 2. Absolute value should not exceed MDL.	x			1. Yes, aqs – 460-71290/9. Soils –460- 72941/1-A , 460-72936/1-A, and 460-73351/1-A 2. Yes, all blanks were less than MDL.
Eh and pH data .	x			
Eh and pH data was included and plotted for all samples?	x			
Soluble Matrix Spike Data Included in Lab Package?	x			460-25599-36 (EF-B30-2.0) and 460-25599-8 (EF-B18-22.5)
1. %R criteria met? (75-125%R). 2. Was the spike concentration 40 mg/Kg? 3. Was a sample spiked at the frequency of 1/batch or 20 samples?	x	x*		1. Yes, batch 73066 = 101%. No, batch 73150 = 55% and reanalysis batch 73560 = 51%. 2. No, batches 73066 = 59.2 mg/kg; batches 73150 and 73560 = 47.3 mg/kg. 3. Yes for all batches.
Insoluble Matrix Spike Data Included in Lab Package?	x			460-25599-36 (EF-B30-2.0) and 460-25599-8 (EF-B18-22.5)
1. %R criteria met? (75-125%R). 2. Was the spike concentration 400 to 800 mg/Kg? 3. Was a sample spiked at the frequency of 1/batch or 20 samples?	x	x*		1. Yes, batch 73066 = 98% batch 73150 = 86% and reanalysis batch 73560 = 77%. 2. No, batches 73066 = 1050 mg/kg; batches 73150 and 73560 = 836 mg/kg. 3. Yes for all batches.
Post Digestion Spike	x			460-25599-36 (EF-B30-2.0) and 460-25599-8 (EF-B18-22.5)
1. %R criteria met? (85-115%R). 2. Was the spike concentration 40 mg/Kg or twice the sample concentration? 3. Was a sample spiked at the frequency of 1/batch or 20 samples?	x			1. Yes, batch 73066 = 98%. Batch 73150 = 102% and reanalysis batch 73560 = 100%. 2. Yes, samples were spiked greater than 2x sample concentration. 3. Yes for all batches.
Sample Duplicate Data Included in Lab Package?	x			460-25599-36 (EF-B30-2.0) and 460-25599-8 (EF-B18-22.5)
1. RPD criteria met? (RPD < 20%) of both results are ≥4x RL or control limit of ±RL if both results are <4x RL. 2.. Was a sample spiked at the frequency of 1/batch or 20 samples?	x			1. The RPDs for all hexavalent results were NC due to nondetect results for both the original and duplicate samples for all analyses in this SDG.
Was a Laboratory Control Sample (LCS) Included in Lab Package?	x			
1. %R criteria met? (80-120%R). 2. Was an LCS analyzed at the frequency of 1/batch or 20 samples?	x			1. Yes, all met criteria. 2. Yes, frequency was met for all analyses.
Miscellaneous Items.				
1. For soils by 7196A, was the pH within a range of 7.0-8.0? 2. For soils by 7199, was the pH within a range of 9.0-9.5? 3. For aqueous by 7196A, was the pH with a range of 1.5-2,5? 4. For soils (3060A), was the digestion temperature 90-95°C for at least 60 minutes? 5. For 7199, was each sample injected twice and was the RPD ≤20?	x			1. Yes 2. NA 3. Yes 4. Yes 5. NA

Holding Times

Sample ID	Method	Days from Sampling to Prep	Days from Prep to Analysis	Days from Sampling to Analysis	Sampling to Prep Status	Prep to Analysis Status	Sampling to Analysis Status
EB042011	SW7196			1			OK @1 days
EF-B17-10.0	SW7196	16	4	20	OK @30 days	OK @7 days	OK @37 days
EF-B17-10.0	SW7196	21	2	23	OK @30 days	OK @7 days	OK @37 days
EF-B17-12.0	SW7196	16	4	20	OK @30 days	OK @7 days	OK @37 days
EF-B17-12.0	SW7196	21	2	23	OK @30 days	OK @7 days	OK @37 days
EF-B17-12.0X	SW7196	16	4	20	OK @30 days	OK @7 days	OK @37 days
EF-B17-12.0X	SW7196	21	2	23	OK @30 days	OK @7 days	OK @37 days
EF-B17-17.0	SW7196	16	4	20	OK @30 days	OK @7 days	OK @37 days
EF-B17-17.0	SW7196	21	2	23	OK @30 days	OK @7 days	OK @37 days
EF-B17-22.5	SW7196	16	4	20	OK @30 days	OK @7 days	OK @37 days
EF-B17-22.5	SW7196	21	2	23	OK @30 days	OK @7 days	OK @37 days
EF-B17-6.0	SW7196	16	4	20	OK @30 days	OK @7 days	OK @37 days
EF-B17-6.0	SW7196	21	2	23	OK @30 days	OK @7 days	OK @37 days
EF-B18-10.0	SW7196	16	4	20	OK @30 days	OK @7 days	OK @37 days
EF-B18-10.0	SW7196	21	2	23	OK @30 days	OK @7 days	OK @37 days
EF-B18-15.0	SW7196	16	4	20	OK @30 days	OK @7 days	OK @37 days
EF-B18-15.0	SW7196	21	2	23	OK @30 days	OK @7 days	OK @37 days
EF-B18-16.0	SW7196	16	4	20	OK @30 days	OK @7 days	OK @37 days
EF-B18-16.0	SW7196	21	2	23	OK @30 days	OK @7 days	OK @37 days
EF-B18-16.0X	SW7196	16	4	20	OK @30 days	OK @7 days	OK @37 days
EF-B18-16.0X	SW7196	21	2	23	OK @30 days	OK @7 days	OK @37 days
EF-B18-17.5	SW7196	16	4	20	OK @30 days	OK @7 days	OK @37 days
EF-B18-17.5	SW7196	21	2	23	OK @30 days	OK @7 days	OK @37 days
EF-B18-22.5	SW7196	16	4	20	OK @30 days	OK @7 days	OK @37 days
EF-B18-22.5	SW7196	21	2	23	OK @30 days	OK @7 days	OK @37 days
EF-B18-6.0	SW7196	16	4	20	OK @30 days	OK @7 days	OK @37 days
EF-B18-6.0	SW7196	21	2	23	OK @30 days	OK @7 days	OK @37 days
EF-B27-1.2	SW7196	16	3	19	OK @30 days	OK @7 days	OK @37 days
EF-B27-2.0	SW7196	16	3	19	OK @30 days	OK @7 days	OK @37 days
EF-B27-4.0	SW7196	16	3	19	OK @30 days	OK @7 days	OK @37 days
EF-B28-0.8	SW7196	16	3	19	OK @30 days	OK @7 days	OK @37 days
EF-B28-2.0	SW7196	16	3	19	OK @30 days	OK @7 days	OK @37 days
EF-B28-4.0	SW7196	16	3	19	OK @30 days	OK @7 days	OK @37 days
EF-B29-0.8	SW7196	16	3	19	OK @30 days	OK @7 days	OK @37 days
EF-B29-2.0	SW7196	16	3	19	OK @30 days	OK @7 days	OK @37 days
EF-B29-4.0	SW7196	16	3	19	OK @30 days	OK @7 days	OK @37 days
EF-B30-0.7	SW7196	16	3	19	OK @30 days	OK @7 days	OK @37 days

Sample ID	Method	Days from Sampling to Prep	Days from Prep to Analysis	Days from Sampling to Analysis	Sampling to Prep Status	Prep to Analysis Status	Sampling to Analysis Status
EF-B30-2.0	SW7196	16	3	19	OK @30 days	OK @7 days	OK @37 days
EF-B30-4.0	SW7196	16	3	19	OK @30 days	OK @7 days	OK @37 days
EF-B31-10.0	SW7196	16	4	20	OK @30 days	OK @7 days	OK @37 days
EF-B31-10.0	SW7196	21	2	23	OK @30 days	OK @7 days	OK @37 days
EF-B31-12.5	SW7196	16	4	20	OK @30 days	OK @7 days	OK @37 days
EF-B31-12.5	SW7196	21	2	23	OK @30 days	OK @7 days	OK @37 days
EF-B31-14.0	SW7196	16	4	20	OK @30 days	OK @7 days	OK @37 days
EF-B31-14.0	SW7196	21	2	23	OK @30 days	OK @7 days	OK @37 days
EF-B31-16.0	SW7196	16	4	20	OK @30 days	OK @7 days	OK @37 days
EF-B31-16.0	SW7196	21	2	23	OK @30 days	OK @7 days	OK @37 days
EF-B31-18.0	SW7196	16	4	20	OK @30 days	OK @7 days	OK @37 days
EF-B31-18.0	SW7196	21	2	23	OK @30 days	OK @7 days	OK @37 days
EF-B31-22.0	SW7196	16	3	19	OK @30 days	OK @7 days	OK @37 days
EF-B31-6.0	SW7196	16	4	20	OK @30 days	OK @7 days	OK @37 days
EF-B31-6.0	SW7196	21	2	23	OK @30 days	OK @7 days	OK @37 days
EF-B31-7.5	SW7196	16	4	20	OK @30 days	OK @7 days	OK @37 days
EF-B31-7.5	SW7196	21	2	23	OK @30 days	OK @7 days	OK @37 days

AECOM

SDG#: 460-25599
Batch 73066
Cr+6 ICAL -05/09/2011
Soils
(p. 1221 of data pkg)

x - concentration	y - response
0	0
50	0.042
100	0.084
500	0.396
750	0.597
1250	0.991

				(p. 1221 of data pkg)
AECOM Calculated Intercept	-2.737	OK	Reported intercept	-2.737
AECOM Slope	1264	OK	Reported Slope	1264
AECOM Calculated r	1.000	OK	Reported r	1.000

EF-B30-2.0 (460-25599-36)	**(p. 1246 of data pkg)**			
Background reading	0.003			
Total absorbance	0.275			
Total absorbance - background	0.272			
Instrument Response (µg/L)	340.991			
Sample weight (g)	2.5			
Final Volume (mL)	100			
Percent solids	0.675			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	20.2	OK	Reported Result (mg/Kg)	20.2

LCS calculation	**LCSS 460-72941/2-A pg. 1246**			
LCS Soluble Instrument Response	0.473			
Instrument Concentration (ug/L)	594.997			
Sample weight	2.5			
Percent solids	1			
Dilution Factor	1			
AECOM Calculated LCS Result (mg/Kg)	23.80	OK rounding	Reported Result (mg/Kg)	23.81

MS calculation	**p. 1246 460-25599-36 MSI (EF-B30-2.0)**			
MS Insoluble Instrument Response	0.281			
Instrument Concentration (ug/L)	352.365			
Sample weight (g)	2.5			
Percent solids	0.675			
Dilution Factor	50			
AECOM Calculated MS Result (mg/Kg)	1044.04	OK rounding	Reported Result (mg/Kg)	1044

%R = Found/True*100	**pg. 1146**			
True Value (mg/kg)	1050			
Native concentration (g)	20.2			
%R	97.5	OK rounding	Reported %R	98

Percent Solids	**pg. 1261 sample ID EF-B30-2.0 (460-25599-36)**			
Empty dish weight=	1			
Wet weight=	6.79			
Dry weight=	4.91			
AECOM%solids =	67.5	OK	TestAmerica reported %solids=	67.5

EF-B19-22.5 (460-25550-23)	**pg. 1246**			
Low Standard	50			
Initial weight (g)	2.5			
Final volume (mL)	100			
Percent solids	0.68			
Dilution Factor	1.00			
Reporting Limit	3.0	OK	Reported RL (mg/Kg)=	3

EF-B31-22.0 (460-25599-22)	**p. 1246 of data pkg**			
Background reading	0.001			
Total absorbance	0.014			
Total absorbance - background	0.013			
Instrument Response (µg/L)	13.691			
Sample weight (g)	2.57			
Final Volume (mL)	100			
Percent solids	0.879			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.6	OK sample ND	Reported Result (mg/Kg)	0.61 J

EF-B29-0.8 (460-25599-23)	**p. 1246 of data pkg**			
Background reading	0.019			
Total absorbance	0.021			
Total absorbance - background	0.002			
Instrument Response (µg/L)	-0.210			
Sample weight (g)	2.48			
Final Volume (mL)	100			
Percent solids	0.848			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.0	OK sample ND	Reported Result (mg/Kg)	2.4 U

EF-B29-2.0 (460-25599-24)	**p. 1246 of data pkg**			
Background reading	0.001			
Total absorbance	0.01			
Total absorbance - background	0.009			
Instrument Response (µg/L)	8.636			
Sample weight (g)	2.5			
Final Volume (mL)	100			
Percent solids	0.866			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.4	OK	Reported Result (mg/Kg)	2.3 U

EF-B29-4.0 (460-25599-26)	**p. 1246 of data pkg**			
Background reading	0.001			
Total absorbance	0.01			
Total absorbance - background	0.009			
Instrument Response (µg/L)	8.636			
Sample weight (g)	2.49			
Final Volume (mL)	100			
Percent solids	0.901			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.4	OK sample ND	Reported Result (mg/Kg)	2.2 U

EF-B28-0.8 (460-25599-27)	**p. 1246 of data pkg**			
Background reading	0.003			
Total absorbance	0.01			
Total absorbance - background	0.007			
Instrument Response (µg/L)	6.109			
Sample weight (g)	2.52			
Final Volume (mL)	100			
Percent solids	0.832			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.3	OK sample ND	Reported Result (mg/Kg)	2.4 U

EF-B28-2.0 (460-25599-28)	**p. 1246 of data pkg**			
Background reading	0.003			
Total absorbance	0.006			
Total absorbance - background	0.003			
Instrument Response (µg/L)	1.054			
Sample weight (g)	2.49			
Final Volume (mL)	100			
Percent solids	0.892			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.05	OK sample ND	Reported Result (mg/Kg)	2.3 U

EF-B28-4.0 (460-25599-30)	**p. 1246 of data pkg**			
Background reading	0.007			
Total absorbance	0.016			
Total absorbance - background	0.009			
Instrument Response (µg/L)	8.636			
Sample weight (g)	2.52			
Final Volume (mL)	100			
Percent solids	0.731			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.5	OK sample ND	Reported Result (mg/Kg)	2.7 U

EF-B27-1.2 (460-25599-31)	**p. 1246 of data pkg**			
Background reading	0.005			
Total absorbance	0.014			
Total absorbance - background	0.009			
Instrument Response (µg/L)	8.636			
Sample weight (g)	2.52			
Final Volume (mL)	100			
Percent solids	0.892			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.4	OK sample ND	Reported Result (mg/Kg)	2.2 U

EF-B27-2.0 (460-25599-32)	**p. 1246 of data pkg**			
Background reading	0			
Total absorbance	0			
Total absorbance - background	0			
Instrument Response (µg/L)	-2.737			
Sample weight (g)	2.52			
Final Volume (mL)	100			
Percent solids	0.883			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	-0.1	OK sample ND	Reported Result (mg/Kg)	2.2 U

EF-B27-4.0 (460-25599-34)	**p. 1247 of data pkg**			
Background reading	0.002			
Total absorbance	0.355			
Total absorbance - background	0.353			
Instrument Response (µg/L)	443.352			
Sample weight (g)	2.56			
Final Volume (mL)	100			
Percent solids	0.662			
Dilution Factor	50			
AECOM Calculated Result (mg/Kg)	1308.0	OK Rounding	Reported Result (mg/Kg)	1310.0

EF-B30-0.7 (460-25599-35)	**p. 1247 of data pkg**			
Background reading	0			
Total absorbance	0.643			
Total absorbance - background	0.643			
Instrument Response (µg/L)	809.827			
Sample weight (g)	2.54			
Final Volume (mL)	100			
Percent solids	0.719			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	44	OK Rounding	Reported Result (mg/Kg)	44.4

EF-B30-4.0 (460-25599-38)	**p. 1247 of data pkg**			
Background reading	0.001			
Total absorbance	0.58			
Total absorbance - background	0.579			
Instrument Response (µg/L)	728.950			
Sample weight (g)	2.51			
Final Volume (mL)	100			
Percent solids	0.564			
Dilution Factor	1000			
AECOM Calculated Result (mg/Kg)	51493	OK Rounding	Reported Result (mg/Kg)	51500

AECOM

SDG#: 460-25599
Batch 73150
Cr+6 ICAL -05/10/11
Soils
(p. 1226 of data pkg)

x - concentration	y - response
0	0
50	0.044
100	0.087
500	0.399
750	0.612
1250	1.01

				(p. 1692 of data pkg)
AECOM Calculated Intercept	-3.068	OK	Reported intercept	-3.068
AECOM Slope	1240	OK	Reported Slope	1240
AECOM Calculated r	0.99994	OK rounding	Reported r	1.000

EF-B18-22.5 (460-25599-8)	**(p. 1248 of data pkg)**			
Background reading	0.005			
Total absorbance	0.007			
Total absorbance - background	0.002			
Instrument Response (µg/L)	-0.588			
Sample weight (g)	2.5			
Final Volume (mL)	100			
Percent solids	0.847			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.0	OK sample ND	Reported Result (mg/Kg)	2.4 U

LCS calculation	**LCSS 460-72936/2-A pg. 1248**			
LCS Soluble Instrument Response	0.478			
Instrument Concentration (ug/L)	589.636			
Sample weight	2.5			
Percent solids	1			
Dilution Factor	1			
AECOM Calculated LCS Result (mg/Kg)	23.59	OK	Reported Result (mg/Kg)	23.59

%R = Found/True*100				
True Value (mg/kg)	25.4			
AECOM Calculated %R	92.9	OK rounding	Reported %R	93

MS calculation	**p. 1248 EF-B18-22.5 (460-25599-8)**			
MS insoluble Instrument Response	0.247			
Instrument Concentration (ug/L)	303.204			
Sample weight (g)	2.5			
Percent solids	0.847			
Dilution Factor	50			
AECOM Calculated MS Result (mg/Kg)	715.95	OK rounding	Reported Result (mg/Kg)	716.4

%R = Found/True*100	**pg. 1146**			
True Value (mg/kg)	836			
Native concentration (g)	0			
%R	85.6	OK rounding	Reported %R	86

Percent Solids	**pg. 1260 sample ID EF-B18-22.5 (460-25599-8)**			
Empty dish weight=	0.98			
Wet weight=	9.19			
Dry weight=	7.93			
AECOM%solids =	84.7	OK	TestAmerica reported %solids=	84.7

AECOM

EF-B18-22.5 (460-25599-8)	**pg. 1248**			
Low Standard	50			
Initial weight (g)	2.5			
Final volume (mL)	100			
Percent solids	0.85			
Dilution Factor	1.00			
Reporting Limit	2.4	OK	Reported RL (mg/Kg)=	2.4

EF-B18-6.0 (460-25599-1)	**pg. 1248**			
Background reading	0			
Total absorbance	0.002			
Total absorbance - background	0.002			
Instrument Response (µg/L)	-0.588			
Sample weight (g)	2.57			
Final Volume (mL)	100			
Percent solids	0.852			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.0	OK sample ND	Reported Result (mg/Kg)	2.3 U

EF-B18-10.0 (460-25599-2)	**pg. 1248**			
Background reading	0			
Total absorbance	0.005			
Total absorbance - background	0.005			
Instrument Response (µg/L)	3.132			
Sample weight (g)	2.56			
Final Volume (mL)	100			
Percent solids	0.841			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.1	OK sample ND	Reported Result (mg/Kg)	2.3 U

EF-B18-15.0 (460-25599-4)	**pg. 1248**			
Background reading	0.002			
Total absorbance	0.078			
Total absorbance - background	0.076			
Instrument Response (µg/L)	91.169			
Sample weight (g)	2.49			
Final Volume (mL)	100			
Percent solids	0.786			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	4.7	OK	Reported Result (mg/Kg)	4.7

EF-B18-16.0 (460-25599-5)	**pg. 1248**			
Background reading	0.001			
Total absorbance	0.008			
Total absorbance - background	0.007			
Instrument Response (µg/L)	5.611			
Sample weight (g)	2.5			
Final Volume (mL)	100			
Percent solids	0.812			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.3	OK sample ND	Reported Result (mg/Kg)	2.5 U

EF-B18-16.0X (460-25599-6)	**pg. 1248**			
Background reading	0			
Total absorbance	0.005			
Total absorbance - background	0.005			
Instrument Response (µg/L)	3.132			
Sample weight (g)	2.51			
Final Volume (mL)	100			
Percent solids	0.815			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.2	OK sample ND	Reported Result (mg/Kg)	2.4 U

EF-B18-17.5 (460-25599-7)	**pg. 1248**			
Background reading	0.004			
Total absorbance	0.012			
Total absorbance - background	0.008			
Instrument Response (µg/L)	6.851			
Sample weight (g)	2.48			
Final Volume (mL)	100			
Percent solids	0.853			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.3	OK Sample ND	Reported Result (mg/Kg)	2.4 U

EF-B17-6.0 (460-25599-9)	**pg. 1248**			
Background reading	0.009			
Total absorbance	0.01			
Total absorbance - background	0.001			
Instrument Response (µg/L)	-1.828			
Sample weight (g)	2.52			
Final Volume (mL)	100			
Percent solids	0.759			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	-0.1	OK Sample ND	Reported Result (mg/Kg)	2.6 U

EF-B17-10.0 (460-25599-10)	**pg. 1248**			
Background reading	0.008			
Total absorbance	0.014			
Total absorbance - background	0.006			
Instrument Response (µg/L)	4.372			
Sample weight (g)	2.5			
Final Volume (mL)	100			
Percent solids	0.778			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.2	OK Sample ND	Reported Result (mg/Kg)	2.6 U

EF-B17-12.0 (460-25599-11)	**pg. 1248**			
Background reading	0.014			
Total absorbance	0.018			
Total absorbance - background	0.004			
Instrument Response (µg/L)	1.892			
Sample weight (g)	2.54			
Final Volume (mL)	100			
Percent solids	0.762			
Dilution Factor	1			
AECOM Calculated Result (mg/Kg)	0.1	OK Sample ND	Reported Result (mg/Kg)	2.6 U

EF-B17-12.0X (460-25599-12)	**pg. 1249**				
Background reading	0.013				
Total absorbance	0.016				
Total absorbance - background	0.003				
Instrument Response (µg/L)	0.652				
Sample weight (g)	2.49				
Final Volume (mL)	100				
Percent solids	0.793				
Dilution Factor	1				
AECOM Calculated Result (mg/Kg)	0.0	OK sample ND	Reported Result (mg/Kg)	2.5 U	

EF-B17-17.0 (460-25599-13)	**pg. 1249**				
Background reading	0.175				
Total absorbance	0.134				
Total absorbance - background	-0.041				
Instrument Response (µg/L)	-53.907				
Sample weight (g)	2.48				
Final Volume (mL)	100				
Percent solids	0.352				
Dilution Factor	1				
AECOM Calculated Result (mg/Kg)	-6.2	Estimated result due to < 50% solids	Reported Result (mg/Kg)	5.7 UJ	

EF-B17-22.5 (460-25599-14)	**pg. 1249**				
Background reading	0.189				
Total absorbance	0.152				
Total absorbance - background	-0.037				
Instrument Response (µg/L)	-48.947				
Sample weight (g)	2.54				
Final Volume (mL)	100				
Percent solids	0.503				
Dilution Factor	1				
AECOM Calculated Result (mg/Kg)	-3.8	OK Sample ND	Reported Result (mg/Kg)	3.9 U	

EF-B31-10.0 (460-25599-17)	**pg. 1249**				
Background reading	0				
Total absorbance	0.47				
Total absorbance - background	0.47				
Instrument Response (µg/L)	579.716				
Sample weight (g)	2.57				
Final Volume (mL)	100				
Percent solids	0.605				
Dilution Factor	250				
AECOM Calculated Result (mg/Kg)	9321.1	OK rounding	Reported Result (mg/Kg)		9320.0

EF-B31-12.5 (460-25599-18)	**pg. 1249**				
Background reading	0				
Total absorbance	0.605				
Total absorbance - background	0.605				
Instrument Response (µg/L)	747.112				
Sample weight (g)	2.5				
Final Volume (mL)	100				
Percent solids	0.597				
Dilution Factor	250				
AECOM Calculated Result (mg/Kg)	12514.4	OK rounding	Reported Result (mg/Kg)		12500.0

EF-B31-14.0 (460-25599-19)	**pg. 1249**			
Background reading	0			
Total absorbance	0.68			
Total absorbance - background	0.68			
Instrument Response (µg/L)	840.110			
Sample weight (g)	2.5			
Final Volume (mL)	100			
Percent solids	0.625			
Dilution Factor	200			
AECOM Calculated Result (mg/Kg)	10753.4	OK rounding	Reported Result (mg/Kg)	10800.0

EF-B31-6.0 (460-25599-15)	**pg. 1249**			
Background reading	0			
Total absorbance	0.351			
Total absorbance - background	0.351			
Instrument Response (µg/L)	432.160			
Sample weight (g)	2.5			
Final Volume (mL)	100			
Percent solids	0.64			
Dilution Factor	250			
AECOM Calculated Result (mg/Kg)	6752.5	OK rounding	Reported Result (mg/Kg)	6750.0

EF-B31-7.5 (460-25599-16)	**pg. 1249**			
Background reading	0			
Total absorbance	0.61			
Total absorbance - background	0.61			
Instrument Response (µg/L)	753.312			
Sample weight (g)	2.51			
Final Volume (mL)	100			
Percent solids	0.638			
Dilution Factor	100			
AECOM Calculated Result (mg/Kg)	4704.1	OK rounding	Reported Result (mg/Kg)	4710.0

EF-B31-16.0 (460-25599-20)	**pg. 1249**			
Background reading	0			
Total absorbance	0.701			
Total absorbance - background	0.701			
Instrument Response (µg/L)	866.149			
Sample weight (g)	2.49			
Final Volume (mL)	100			
Percent solids	0.629			
Dilution Factor	250			
AECOM Calculated Result (mg/Kg)	13825.6	OK rounding	Reported Result (mg/Kg)	13800.0

EF-B31-18.0 (460-25599-21)	**pg. 1249**			
Background reading	0			
Total absorbance	0.669			
Total absorbance - background	0.669			
Instrument Response (µg/L)	826.470			
Sample weight (g)	2.53			
Final Volume (mL)	100			
Percent solids	0.598			
Dilution Factor	250			
AECOM Calculated Result (mg/Kg)	13656.7	OK rounding	Reported Result (mg/Kg)	13700.0

Attachment C

Additional QC Documentation

From: Grieco, Patricia [mailto:Patricia.Grieco@testamericainc.com]
Sent: Tuesday, May 31, 2011 5:04 PM
To: Krowitz, Lisa
Cc: Webster, Justin
Subject: RE: PPG GA Resubmittal request 460-25599

Hello,

Log-in states that the second signature is one of our log-in technicians and the date and time of 4/20/11 17:15 is the date and time it was brought in. Since the samples were dropped off there is just the log in tech as there was no transfer to our courier and transfer from curer to lab it was from AECOM direct to the lab.

No revised report is then required.

Thank you

From: Krowitz, Lisa [mailto:Lisa.Krowitz@aecom.com]
Sent: Tuesday, May 31, 2011 4:16 PM
To: Grieco, Patricia
Cc: Webster, Justin
Subject: PPG GA Resubmittal request 460-25599

Patty,

For SDG 460-25599, there was no Date or Time on the COC or the Sample Login Receipt Checklist. Could you please revise the data package?

Thank you,

Lisa

Lisa Krowitz, MS
Senior Project Chemist, Environment
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