Appendix E-1

Historical Sample Results

25 April, 2011

Dresdner-Robin Environmental Management
Att: Mr. Douglas Neumann, Director
371 Warren Street
Jersey City, New Jersey 07302

Re: PPG – Sites 107 and 108, Laboratory Job No. 460-22465-1

Dear Mr. Neumann,

This cover letter, and the attached documents, detail the data validation findings associated with the following sample analytical results contained in the above-referenced deliverables set:

Site Name: PPG – Sites 107 and 108

Fractions		
Hexavalent chromium (Cr^{+6})	Laboratory:	TestAmerica Laboratories, Inc.
Total Metals (Cr, Ni, Sb, Tl, V)		
pH / Eh ; ORP		
Report No.: 460-22465-1	Matrix:	Non-Aqueous

Reviewer: Chris Taylor

Prepared By: Environmental Quality Associates, Inc.
487 Shoddy Hollow Road
Middletown, New York 10940

SECTION A
Sample Information

The above-noted laboratory Job Number samples were analyzed by TestAmerica Laboratories, Inc., Edison, NJ (NJ Laboratory ID Cert. No. 12028). Hexavalent chromium (Cr^{+6}) samples were prepared and analyzed using USEPA SW-846 methods 3060A and 7196A. Total metals samples were prepared and analyzed using USEPA SW-846 methods 3050B (3010A for aqueous samples) and 6010B. Oxidation / Reduction Potential (ORP) characteristics were determined by measurement of pH / Eh values for samples and subsequent extrapolation against the $HCrO_4$- / $Cr(OH)_3$ phase diagram; pH and Eh values were measured by Standard Methods 4500H-B and 2580B, respectively.

A summary table of samples analyzed is presented below. Please note that the number of 'Total Samples' listed below is exclusive of associated QC samples (MS / MD).

Sample ID	Lab ID		Date	Analysis	
107_-	460-22465-	Matrix	Collected	Hex Cr	Metals
K032_0.0	1	S	01/25/11	X	X
K032_3.5	2	S	01/25/11	X	X
K032_7.5	3	S	01/25/11	X	X
K032_10.5	4	S	01/25/11	X	X
K032_14.5	5	S	01/25/11	X	X
K032_18.5	6	S	01/25/11	X	X
K036_0.0	7	S	01/25/11	X	X
K036_3.5	8	S	01/25/11	X	X
K036_7.5	9	S	01/25/11	X	X
I036_0.0	10	S	01/25/11	X	X
I036_3.5	11	S	01/25/11	X	X
I036_7.5	**12**	S	01/25/11	X	X
I036_11.5	13	S	01/25/11	X	X
I036_15.5	14	S	01/25/11	X	X
I036_19.5	15	S	01/25/11	X	X
I036_23.5	16	S	01/25/11	X	X
G036_0.0	17	S	01/25/11	X	X
G036_5.0	18	S	01/25/11	X	X
G036_6.0	19	S	01/25/11	X	X
G036_7.0	20	S	01/25/11	X	X
G036_15.0	21	S	01/25/11	X	X
G036_19.0	22	S	01/25/11	X	X
G036_23.0	23	S	01/25/11	X	X
E034_0.0	24	S	01/25/11	X	X
E034_3.5	25	S	01/25/11	X	X
E034_7.5	26	S	01/25/11	X	X
E034_10.5	27	S	01/25/11	X	X
E034_14.5	28	S	01/25/11	X	X
E034_18.5	29	S	01/25/11	X	X
G038_0.0	30	S	01/25/11	X	X
G038_4.5	31	S	01/25/11	X	X
G038_6.0	**32**	S	01/25/11	X	X
G038_7.0	33	S	01/25/11	X	X
Rep012511-1	34	S	01/25/11	X	X
Rep012511-2	**35**	S	01/25/11	X	X
FB-1	36	A	01/25/11	X	X

S = Non-Aqueous Matrix
A = Aqueous Matrix

Total Samples = 36
Bold Type indicates sample taken as a Batch QC sample

All samples were received one day after collection. Samples were received on ice at recorded temperatures of 0.2 and 5.3°C.

SECTION C
Hexavalent Chromium

Holding times from sample collection to analysis (≤24 hours for aqueous matrix; ≤30 days for non-aqueous matrix) were met for all samples.

All calibration criteria were met for this sample group, including: initial calibration linearity and continuing calibration frequency and accuracy. Method and calibration blanks were free of contamination. Reported spike recoveries, duplicate precision values, reported % moisture (% solids) and reported Cr^{+6} results were randomly verified from the raw data with no disparities between reported and calculated results found.

Cr^{+6} was not detected in Field Blank FB-1.

Matrix spike recoveries for soluble Cr^{+6} in samples 460-22465-18 and -32 (107_G036_5.0 and 107_G038_6.0, respectively) were below the allowable limit of 75% in both initial and re-analyses, with recoveries in sample 460-22465-18 below 50% (49%, 17%).

- QA Action: 1) Qualify Cr^{+6} results in batch samples associated with 460-22465-18 (samples 1 – 20) as rejected, 'R', per NJDEP SOP No. 5.A.10, Rev.3, Sect. VI.(D).7.D.8)e). See Data Usability comments below.

  2) Qualify Cr^{+6} results in batch samples associated with 460-22465-32 (samples 21 – 35) as estimated, 'UJ' or 'J', with the potential for low bias. See Data Usability comments below.

- Data Usability: 1) Eh / pH results were evaluated to determine ReDox characteristics of batch samples as an indicator of ability to support Cr^{+6}. The following associated batch samples were characterized as "Reducing" based upon the Method 3060A, Table 2 phase diagram: 460-22465- 4, -5, -8, -14, -15, -17, -18; these samples are not likely to support the presence of Cr^{+6}, or if positive, may be low-biased.

  2) Eh / pH results were evaluated to determine ReDox characteristics of batch samples as an indicator of ability to support Cr^{+6}. The following associated batch samples were characterized as "Reducing" based upon the Method 3060A, Table 2 phase diagram: 460-22465- 21, -22, -24, -28, -29, -30; these samples are not likely to support the presence of Cr^{+6}.

SECTION D
Total Metals

Holding times from sample collection to analysis were met for all total metals samples.

Calibration and QC criteria were met for this sample group, including: initial calibration linearity, continuing calibration frequency and accuracy, blanks, interference checks, duplicate precision, LCS recoveries and serial dilution sample precision, *with the exception detailed below*. Reported spike recoveries, duplicate precision values, reported % moisture (% solids) and reported metal results were randomly verified from the raw data with no disparities between reported and calculated results found.

The duplicate precision values for chromium (Cr) and nickel (Ni) in the matrix duplicate of sample 107_G038_6.0 (Lab ID# 460-22465-32) were above the upper limit of 20% RPD, at 22% and 21%, respectively. The duplicate precision value for nickel in the matrix duplicate of sample REP012511-2 (Lab ID# 460-22465-35) was above the upper limit of 20% RPD, at 49%.

- QA Action: 1) Qualify Cr and Ni results in associated samples 460-22465-29 through -34 (inclusive) as estimated, 'UJ' or 'J', with indeterminate bias direction.

  2) Qualify Ni in sample REP012511-2 and its collocated sample 107_E034-3.5 as estimated, 'J', with indeterminate bias direction.

No positive element results were reported for the field blank sample (FB-1).

SECTION E
pH / Eh (ORP)

Samples for pH analysis were analyzed outside the method-defined holding-time of 15 minutes, which is essentially a 'field-performed' analysis. The laboratory assigned all reported pH results an 'HF' qualifier flag to indicate this exception. Since the samples were chilled on receipt at the lab, and analyzed within one day of receipt, no data validation qualifiers were assigned.

Calibrations for pH analysis were acceptable, as were required QC criteria (sample duplicates). Standard mV solution checks for Eh (Light's solution) were within acceptable ranges, as were sample duplicate measurements.

Reported pH and eH (ORP) values and resulting ReDox (reducing or oxidizing) characteristics were randomly verified from the $HCrO_4^-$ / $Cr(OH)_3$ phase diagram; no disparities relative to reported values and characteristics were found. These values are only used for data assessment purposes when Cr^{+6} sample spike recoveries are outside acceptable recovery ranges; refer to the data usability section above.

SECTION F
COLLOCATED SAMPLES

107_REP012511-1 and 107_REP012511-2 were identified as being collocated with I036_3.5 and E034_3.5, respectively. Precision results (as %RPD) are tabulated below. Note: ND = Not Detected ; nc = not calculated ; * = absolute difference is shown if either sample <5x CRQL

	I036_3.5	R012511-1	%RPD	E034_3.5	R012511-2	%RPD*
Chromium	81.6	64.9	22.8	39.6	100	86.5
Nickel	18.2	24.5	29.5	43.1	51.1	17.0
Antimony	ND	ND	nc	ND	1.9	1.9 *
Thallium	ND	ND	nc	ND	ND	nc
Vanadium	28.6	28.9	1.0	22.0	21.9	0.5
Cr (VI)	ND	ND	nc	2.6	3.1	0.5 *

The NJDEP DV guidance protocols do not provide qualification thresholds for field duplicate precision values; however, EPA Region II data validation guidance (SOP No. HW-2, Rev. 13, Sept. 2006) provides for a qualification range of >35%, <120% RPD for soils >5x CRQL values, and difference >2x CRQL if either sample is <5x CRQL.

- QA Action: Qualify total chromium results in E034_3.5 and 107_REP012511-2 as estimated, 'J', due to collocated sample precision in exceedance of guidance threshold. Bias direction is indeterminate.

SECTION G
Overall Recommendations

The results of the review and validation process for the above analytical fractions and associated samples are summarized on the attached standard-format NJDEP Data Validation Report Forms, in order to facilitate the end-user's' review of these data.

Very truly yours,
Environmental Quality Associates, Inc.

Chris W. Taylor
Vice President

02 May, 2011

Dresdner-Robin Environmental Management
Att: Mr. Douglas Neumann, Director
371 Warren Street
Jersey City, New Jersey 07302

Re: PPG – Site 107, Laboratory Job No. 460-22506-1

Dear Mr. Neumann,

This cover letter, and the attached documents, detail the data validation findings associated with the following sample analytical results contained in the above-referenced deliverables set:

Site Name: PPG – Sites 107 and 108

Fractions		
Hexavalent chromium (Cr^{+6})	Laboratory:	TestAmerica Laboratories, Inc.
Total Metals (Cr, Ni, Sb, Tl, V)		
pH / Eh ; ORP		
Report No.: 460-22506-1	Matrix:	Non-Aqueous

Reviewer: Chris Taylor

Prepared By: Environmental Quality Associates, Inc.
487 Shoddy Hollow Road
Middletown, New York 10940

SECTION A
Sample Information

The above-noted laboratory Job Number samples were analyzed by TestAmerica Laboratories, Inc., Edison, NJ (NJ Laboratory ID Cert. No. 12028). Hexavalent chromium (Cr^{+6}) samples were prepared and analyzed using USEPA SW-846 methods 3060A and 7196A. Total metals samples were prepared and analyzed using USEPA SW-846 methods 3050B (3010A for aqueous samples) and 6010B. Oxidation / Reduction Potential (ORP) characteristics were determined by measurement of pH / Eh values for samples and subsequent extrapolation against the $HCrO_4$- / $Cr(OH)_3$ phase diagram; pH and Eh values were measured by Standard Methods 4500H-B and 2580B, respectively.

A summary table of samples analyzed is presented below. Please note that the number of 'Total Samples' listed below is exclusive of associated QC samples (MS / MD).

Sample ID	Lab ID		Date	Analysis	
107_-	460-22506-	Matrix	Collected	Hex Cr	Metals
I038_0.0	1	S	01/26/11	X	X
I038_3.5	2	S	01/26/11	X	X
I038_6.5	3	S	01/26/11	X	X
I038_7.0	**4**	S	01/26/11	X	X
I038_8.0	5	S	01/26/11	X	X
I038_10.0	**6**	S	01/26/11	X	X
I038_11.0	7	S	01/26/11	X	X
I038_12.0	8	S	01/26/11	X	X
I038_17.0	9	S	01/26/11	X	X
I038_21.0	10	S	01/26/11	X	X
I038_25.0	**11**	S	01/26/11	X	X
K038_0.0	12	S	01/26/11	X	X
K038_3.5	13	S	01/26/11	X	X
K038_7.5	14	S	01/26/11	X	X
K038_11.5	15	S	01/26/11	X	X
K038_15.5	16	S	01/26/11	X	X
K038_16.5	17	S	01/26/11	X	X
K038_20.5	18	S	01/26/11	X	X
K038_24.5	19	S	01/26/11	X	X
K040_0.0	20	S	01/26/11	X	X
K040_3.5	21	S	01/26/11	X	X
K040_7.5	22	S	01/26/11	X	X
K040_11.5	23	S	01/26/11	X	X
K040_16.0	24	S	01/26/11	X	X
K040_20.0	25	S	01/26/11	X	X
K040_24.0	26	S	01/26/11	X	X
I040_0.0	27	S	01/26/11	X	X
I040_3.5	28	S	01/26/11	X	X
I040_7.5	29	S	01/26/11	X	X
I040_11.5	30	S	01/26/11	X	X
I040_15.5	31	S	01/26/11	X	X
I040_16.5	32	S	01/26/11	X	X
I040_20.5	33	S	01/26/11	X	X
I040_24.5	34	S	01/26/11	X	X
FB012611	35 FB	A	01/26/11	X	X

S = Non-Aqueous Matrix
A = Aqueous Matrix

Total Samples = 35
Bold Type indicates sample taken as a Batch QC sample

All samples were received one day after collection. Samples were received on ice at recorded temperature of 2.3°C.

SECTION C
Hexavalent Chromium

Holding times from sample collection to analysis (≤24 hours for aqueous matrix; ≤30 days for non-aqueous matrix) were met for all samples.

All calibration and QC criteria were met for this sample group, including: initial calibration linearity, continuing calibration frequency and accuracy, blanks, duplicate precision, and matrix and post-spike recoveries. Reported spike recoveries, duplicate precision values, reported % moisture (% solids) and reported Cr^{+6} results were randomly verified from the raw data with no disparities between reported and calculated results found.

Cr^{+6} was detected in Field Blank FB-1, at 1.8 J ug/L; this is equivalent to a nominal value of 0.072 mg/Kg. For qualification assessment, associated positive Cr^{+6} soil results below 3x adjusted nominal value are negated, while results >3x but <10x adjusted nominal values are qualified as estimated, 'J', with indication of positive bias.

- QA Action: The reported Cr^{+6} result for sample 460-22506-9 (107_I038_17.0) was >3x but <10x the adjusted nominal Field Blank value, and was flagged as estimated, 'J', with indication of positive bias due to field blank contamination.

No collocated field duplicate samples were identified for this sample delivery group.

SECTION D
Total Metals

Holding times from sample collection to analysis were met for all total metals samples.

Calibration and QC criteria were met for this sample group, including: initial calibration linearity, continuing calibration frequency and accuracy, blanks, interference checks, duplicate precision, LCS recoveries and serial dilution sample precision, *with the exception detailed below*. Reported spike recoveries, duplicate precision values, reported % moisture (% solids) and reported metal results were randomly verified from the raw data with no disparities between reported and calculated results found.

The duplicate precision values for chromium (Cr) and nickel (Ni) in the matrix duplicate of sample 460-22465-32 were above the upper limit of 20% RPD, at 22% and 21%, respectively. It is noted that although this batch duplicate sample was not from this SDG's samples, it is from this site, and thus may be considered to be of similar matrix type.

- QA Action: Qualify Cr and Ni results in associated samples 460-22506-21 through -34 (inclusive) as estimated, 'UJ' or 'J', with indeterminate bias direction.

It is noted that no post-digestion spike sample was reported for this delivery group. Serial dilution samples were reported, with acceptable precision.

No positive element results were reported for the field blank sample (FB012611).

No collocated field duplicate samples were identified for this sample delivery group.

SECTION E
pH / Eh (ORP)

Samples for pH analysis were analyzed outside the method-defined holding-time of 15 minutes, which is essentially a 'field-performed' analysis. The laboratory assigned all reported pH results an 'HF' qualifier flag to indicate this exception. Since the samples were chilled on receipt at the lab, and analyzed within one day of receipt, no data validation qualifiers were assigned.

Calibrations for pH analysis were acceptable, as were required QC criteria (sample duplicates). Standard mV solution checks for Eh (Light's solution) were within acceptable ranges, as were sample duplicate measurements.

Reported pH and eH (ORP) values and resulting ReDox (reducing or oxidizing) characteristics were randomly verified from the $HCrO_4$- / $Cr(OH)_3$ phase diagram; no disparities relative to reported values and characteristics were found. These values are only used for data assessment purposes when Cr^{+6} sample spike recoveries are outside acceptable recovery ranges; reported spike recoveries were within specified limits.

SECTION F
Overall Recommendations

The results of the review and validation process for the above analytical fractions and associated samples are summarized on the attached standard-format NJDEP Data Validation Report Forms, in order to facilitate the end-user's' review of these data.

Very truly yours,
Environmental Quality Associates, Inc.

Chris W. Taylor
Vice President

03 May, 2011

Dresdner-Robin Environmental Management
Att: Mr. Douglas Neumann, Director
371 Warren Street
Jersey City, New Jersey 07302

Re: PPG – Site 107, Laboratory Job No. 460-22560-1

Dear Mr. Neumann,

This cover letter, and the attached documents, detail the data validation findings associated with the following sample analytical results contained in the above-referenced deliverables set:

Site Name: PPG – Site 107

Fractions
Hexavalent chromium (Cr^{+6})
Total Metals (Cr, Ni, Sb, Tl, V)
pH / Eh ; ORP

Laboratory: TestAmerica Laboratories, Inc.

Report No.: 460-22560-1

Matrix: Non-Aqueous

Reviewer: Chris Taylor

Prepared By: Environmental Quality Associates, Inc.
487 Shoddy Hollow Road
Middletown, New York 10940

SECTION A
Sample Information

The above-noted laboratory Job Number samples were analyzed by TestAmerica Laboratories, Inc., Edison, NJ (NJ Laboratory ID Cert. No. 12028). Hexavalent chromium (Cr^{+6}) samples were prepared and analyzed using USEPA SW-846 methods 3060A and 7196A. Total metals samples were prepared and analyzed using USEPA SW-846 methods 3050B (3010A for aqueous samples) and 6010B. Oxidation / Reduction Potential (ORP) characteristics were determined by measurement of pH / Eh values for samples and subsequent extrapolation against the $HCrO_4$- / $Cr(OH)_3$ phase diagram; pH and Eh values were measured by Standard Methods 4500H-B and 2580B, respectively.

A summary table of samples analyzed is presented below. Please note that the number of 'Total Samples' listed below is exclusive of associated QC samples (MS / MD).

Sample ID	Lab ID		Date	Analysis	
107_-	460-22560-	Matrix	Collected	Hex Cr	Metals
G040_0.0-0.5	1	S	01/28/11	X	X
G040_3.5	2	S	01/28/11	X	X
G040_4.5	3	S	01/28/11	X	X
G040_5.0	4	S	01/28/11	X	X
G040_7.5	5	S	01/28/11	X	X
G040_11.5	6	S	01/28/11	X	X
G040_14.5	7	S	01/28/11	X	X
G042_0.0-0.5	8	S	01/28/11	X	X
G042_3.5	9	S	01/28/11	X	X
G042_7.5	**10**	S	01/28/11	X	X
G042_11.5	11	S	01/28/11	X	X
G042_14.0	12	S	01/28/11	X	X
G042_18.0	13	S	01/28/11	X	X
G042_22.0	14	S	01/28/11	X	X
I042_0.0-0.5	15	S	01/28/11	X	X
I042_3.5	16	S	01/28/11	X	X
I042_7.5	**17**	S	01/28/11	X	X
I042_11.5	18	S	01/28/11	X	X
I042_14.5	19	S	01/28/11	X	X
I042_18.5	20	S	01/28/11	X	X
I042_22.5	**21**	S	01/28/11	X	X
K042_0.0	22	S	01/28/11	X	X
K042_3.5	23	S	01/28/11	X	X
K042_7.5	24	S	01/28/11	X	X
K042_11.5	25	S	01/28/11	X	X
K042_15.0	26	S	01/28/11	X	X
K042_19.0	27	S	01/28/11	X	X
K042_23.0	**28**	S	01/28/11	X	X
G044_0.0-0.5	29	S	01/28/11	X	X
G044_3.5	30	S	01/28/11	X	X
G044_7.5	31	S	01/28/11	X	X
G044_15.0	32	S	01/28/11	X	X
G044_19.0	33	S	01/28/11	X	X
G044_23.0	34	S	01/28/11	X	X
FB012811	35	A	01/28/11	X	X
REP012811	36	S	01/28/11	X	X

S = Non-Aqueous Matrix
A = Aqueous Matrix

Total Samples = 36
Bold Type indicates sample taken as a Batch QC sample

All samples were received on the same day as collected. Samples were received on ice at recorded temperature of 3.1°C.

SECTION C
Hexavalent Chromium

Holding times from sample collection to analysis (≤24 hours for aqueous matrix; ≤30 days for non-aqueous matrix) were met for all samples.

All calibration and QC criteria were met for this sample group, including: initial calibration linearity, continuing calibration frequency and accuracy, blanks, duplicate precision, and matrix and post-spike recoveries. Reported spike recoveries, duplicate precision values, reported % moisture (% solids) and reported Cr^{+6} results were randomly verified from the raw data with no disparities between reported and calculated results found.

Cr^{+6} was not detected in Field Blank FB-1.

SECTION D
Total Metals

Holding times from sample collection to analysis were met for all total metals samples.

Calibration and QC criteria were met for this sample group, including: initial calibration linearity, continuing calibration frequency and accuracy, blanks, interference checks, matrix spike recoveries, duplicate precision, LCS recoveries and serial dilution sample precision. Reported spike recoveries, duplicate precision values, reported % moisture (% solids) and reported metal results were randomly verified from the raw data with no disparities between reported and calculated results found.

No positive element results were reported for the field blank sample (FB-1).

SECTION E
pH / Eh (ORP)

Samples for pH analysis were analyzed outside the method-defined holding-time of 15 minutes, which is essentially a 'field-performed' analysis. The laboratory assigned all reported pH results an 'HF' qualifier flag to indicate this exception. Since the samples were chilled on receipt at the lab, and analyzed within one day of receipt, no data validation qualifiers were assigned.

Calibrations for pH analysis were acceptable, as were required QC criteria (sample duplicates). Standard mV solution checks for Eh (Light's solution) were within acceptable ranges, as were sample duplicate measurements.

Reported pH and eH (ORP) values and resulting ReDox (reducing or oxidizing) characteristics were randomly verified from the $HCrO_4$- / $Cr(OH)_3$ phase diagram; no disparities relative to reported values and characteristics were found. These values are only used for data assessment purposes when Cr^{+6} sample spike recoveries are outside acceptable recovery ranges; refer to the data usability section above.

SECTION F
COLLOCATED SAMPLES

Sample 107_REP012811-1 was identified as being collocated with sample 107_I042_3.5. Precision results are tabulated below.

Note: ND = Not Detected ; nc = not calculated ; * = absolute difference is shown if either sample <5x CRQL

	I042_3.5	R012811-1	%RPD *
Chromium	26.7	24.5	8.6
Nickel	15.5	21.3	5.8 *
Antimony	1.1	ND	1.1 *
Thallium	ND	ND	nc
Vanadium	22.1	25.7	3.6 *
Cr (VI)	ND	5.9	5.9 *

The NJDEP DV guidance protocols do not provide qualification thresholds for field duplicate precision values; however, EPA Region II data validation guidance (SOP No. HW-2, Rev. 13, Sept. 2006) provides for a qualification range of >35%, <120% RPD for soils >5x CRQL values, and difference >2x CRQL if either sample is <5x CRQL.

- QA Action: Qualify Cr^{+6} results in I042_3.5 and 107_REP012811-1 as estimated, 'J', due to collocated sample precision in exceedance of guidance threshold. Bias direction is indeterminate.

SECTION G
Overall Recommendations

The results of the review and validation process for the above analytical fractions and associated samples are summarized on the attached standard-format NJDEP Data Validation Report Forms, in order to facilitate the end-user's' review of these data.

Very truly yours,
Environmental Quality Associates, Inc.

Chris W. Taylor
Vice President

05 May, 2011

Dresdner-Robin Environmental Management
Att: Mr. Douglas Neumann, Director
371 Warren Street
Jersey City, New Jersey 07302

Re: PPG – Site 107, Laboratory Job No. 460-22638-1

Dear Mr. Neumann,

This cover letter, and the attached documents, detail the data validation findings associated with the following sample analytical results contained in the above-referenced deliverables set:

Site Name: PPG – Site 107

Fractions		
Hexavalent chromium (Cr^{+6})	Laboratory:	TestAmerica Laboratories, Inc.
Total Metals (Cr, Ni, Sb, Tl, V)		
pH / Eh ; ORP		
Report No.: 460-22638-1	Matrix:	Non-Aqueous

Reviewer: Chris Taylor

Prepared By: Environmental Quality Associates, Inc.
487 Shoddy Hollow Road
Middletown, New York 10940

SECTION A
Sample Information

The above-noted laboratory Job Number samples were analyzed by TestAmerica Laboratories, Inc., Edison, NJ (NJ Laboratory ID Cert. No. 12028). Hexavalent chromium (Cr^{+6}) samples were prepared and analyzed using USEPA SW-846 methods 3060A and 7196A. Total metals samples were prepared and analyzed using USEPA SW-846 methods 3050B (3010A for aqueous samples) and 6010B. Oxidation / Reduction Potential (ORP) characteristics were determined by measurement of pH / Eh values for samples and subsequent extrapolation against the $HCrO_4$- / $Cr(OH)_3$ phase diagram; pH and Eh values were measured by Standard Methods 4500H-B and 2580B, respectively.

A summary table of samples analyzed is presented below. Please note that the number of 'Total Samples' listed below is exclusive of associated QC samples (MS / MD).

Sample ID	Lab ID		Date	Analysis	
107_-	460-22638-	Matrix	Collected	Hex Cr	Metals
F040_0.0	1	S	01/31/11	X	X
F040_3.5	2	S	01/31/11	X	X
F040_5.5	3	S	01/31/11	X	X
F040_6.0	4	S	01/31/11	X	X
F040_6.5	5	S	01/31/11	X	X
F040_7.5	6	S	01/31/11	X	X
F040_11.5	7	S	01/31/11	X	X
F040_15.0	8	S	01/31/11	X	X
F040_19.0	9	S	01/31/11	X	X
F040_22.5	**10**	S	01/31/11	X	X
I044_0.0	11	S	01/31/11	X	X
I044_3.5	12	S	01/31/11	X	X
I044_7.5	13	S	01/31/11	X	X
I044_11.5	14	S	01/31/11	X	X
I044_13.5	15	S	01/31/11	X	X
I044_17.5	16	S	01/31/11	X	X
I044_21.5	17	S	01/31/11	X	X
K044_0.0	18	S	01/31/11	X	X
K044_3.5	19	S	01/31/11	X	X
K044_7.5	**20**	S	01/31/11	X	X
K044_11.5	21	S	01/31/11	X	X
K044_14.5	22	S	01/31/11	X	X
K044_18.5	**23**	S	01/31/11	X	X
K044_22.5	24	S	01/31/11	X	X
K046_0.0	25	S	01/31/11	X	X
K046_3.5	26	S	01/31/11	X	X
K046_11.5	27	S	01/31/11	X	X
K046_15.5	28	S	01/31/11	X	X
K046_19.5	29	S	01/31/11	X	X
REP013111	30	S	01/31/11	X	X
FB013111	31FB	A	01/31/11	X	X
G046_0.0	32	S	01/31/11	X	X
G046_3.5	33	S	01/31/11	X	X
G046_4.5	34	S	01/31/11	X	X
G046_5.0	35	S	01/31/11	X	X
G046_5.5	36	S	01/31/11	X	X

Sample ID 107_-	Lab ID 460-22638-	Matrix	Date Collected	Analysis	
				Hex Cr	Metals
G046_7.5	37	S	01/31/11	X	X
G046_10.0	38	S	01/31/11	X	X
G046_14.0	39	S	01/31/11	X	X
G046_18.0	40	S	01/31/11	X	X
I046_0.0	41	S	01/31/11	X	X
I046_3.5	42	S	01/31/11	X	X
I046_7.5	43	S	01/31/11	X	X
I046_11.5	44	S	01/31/11	X	X
I046_15.5	45	S	01/31/11	X	X
I046_19.5	46	S	01/31/11	X	X

S = Non-Aqueous Matrix
A = Aqueous Matrix

Total Samples = 46
Bold Type indicates sample taken as a Batch QC sample

All samples were received on the same day as collected. Samples were received on ice at recorded temperature of 2.4°C.

SECTION C
Hexavalent Chromium

Holding times from sample collection to analysis (≤24 hours for aqueous matrix; ≤30 days for non-aqueous matrix) were met for all samples.

All calibration and QC criteria were met for this sample group, including: initial calibration linearity, continuing calibration frequency and accuracy, blanks, duplicate precision, and matrix and post-spike recoveries. Reported spike recoveries, duplicate precision values, reported % moisture (% solids) and reported Cr^{+6} results were randomly verified from the raw data with no disparities between reported and calculated results found.

Cr^{+6} was not detected in Field Blank FB-1.

SECTION D
Total Metals

Holding times from sample collection to analysis were met for all total metals samples.

Calibration and QC criteria were met for this sample group, including: initial calibration linearity, continuing calibration frequency and accuracy, blanks, interference checks, duplicate precision, LCS recoveries and serial dilution sample precision, *with the exception detailed below*. Reported spike recoveries, duplicate precision values, reported % moisture (% solids) and reported metal results were randomly verified from the raw data with no disparities between reported and calculated results found.

The recovery for antimony (Sb) in the matrix spike of sample 107_K044_7.5 (Lab ID# 460-22638-20) was below the lower limit of 75%, at 49%. The associated LCS recoveries for Sb were within acceptable limits, indicating analytical process control.

- QA Action: Qualify Sb results in in associated field samples (460-22638-17-30, 32-35 and 6-7) as estimated values 'UJ' or 'J', with indication of low bias due to matrix effects.

It is noted that no post-digestion spike samples were reported for this delivery group. Serial dilution samples were reported, with acceptable precision shown; however, for Sb, none of the reported results were above the minimum threshold values for meaningful precision interpretation. Therefore, the indication of low bias for associated Sb resultsbased on matrix spike recovery is maintained.

No positive element results were reported for the field blank sample (FB-1).

SECTION E
pH / Eh (ORP)

Samples for pH analysis were analyzed outside the method-defined holding-time of 15 minutes, which is essentially a 'field-performed' analysis. The laboratory assigned all reported pH results an 'HF' qualifier flag to indicate this exception. Since the samples were chilled on receipt at the lab, and analyzed within one day of receipt, no data validation qualifiers were assigned.

Calibrations for pH analysis were acceptable, as were required QC criteria (sample duplicates). Standard mV solution checks for Eh (Light's solution) were within acceptable ranges, as were sample duplicate measurements.

Reported pH and eH (ORP) values and resulting ReDox (reducing or oxidizing) characteristics were randomly verified from the $HCrO_4$- / $Cr(OH)_3$ phase diagram; no disparities relative to reported values and characteristics were found. These values are only used for data assessment purposes when Cr^{+6} sample spike recoveries are outside acceptable recovery ranges; refer to the data usability section above.

SECTION F
COLLOCATED SAMPLES

Sample 107_REP013111-1 was identified as being collocated with sample 107_K046_3.5. Precision results are tabulated below.

Note: ND = Not Detected ; nc = not calculated ; * = absolute difference is shown if either sample <5x CRQL

	K046_3.5	R013111-1	%RPD *
Chromium	32.3	31.4	2.8
Nickel	35.9	66.6	30.7 *
Antimony	ND	3.9	3.9 *
Thallium	ND	ND	nc
Vanadium	147	165	11.5
Cr (VI)	ND	ND	nc

The NJDEP DV guidance protocols do not provide qualification thresholds for field duplicate precision values; however, EPA Region II data validation guidance (SOP No. HW-2, Rev. 13, Sept. 2006) provides for a qualification range of >35%, <120% RPD for soils >5x CRQL values, and difference >2x CRQL if either sample is <5x CRQL.

- QA Action: Qualify Ni results in K046_3.5 and 107_REP013111-1 as estimated, 'J', due to collocated sample precision in exceedance of guidance threshold. Bias direction is indeterminate.

SECTION G
Overall Recommendations

The results of the review and validation process for the above analytical fractions and associated samples are summarized on the attached standard-format NJDEP Data Validation Report Forms, in order to facilitate the end-user's' review of these data.

Very truly yours,
Environmental Quality Associates, Inc.

Chris W. Taylor
Vice President

18 May, 2011

Dresdner-Robin Environmental Management
Att: Mr. Douglas Neumann, Director
371 Warren Street
Jersey City, New Jersey 07302

Re: PPG – Sites 107 & 108, Laboratory Job No. 460-22912-1

Dear Mr. Neumann,

This cover letter, and the attached documents, detail the data validation findings associated with the following sample analytical results contained in the above-referenced deliverables set:

Site Name: PPG – Sites 107 & 108

Fractions
Hexavalent chromium (Cr^{+6}) Laboratory: TestAmerica Laboratories, Inc.
Total Metals (Cr, Ni, Sb, Tl, V)
pH / Eh ; ORP

Report No.: 460-22912-1 Matrix: Non-Aqueous

Reviewer: Chris Taylor

Prepared By: Environmental Quality Associates, Inc.
487 Shoddy Hollow Road
Middletown, New York 10940

SECTION A
Sample Information

The above-noted laboratory Job Number samples were analyzed by TestAmerica Laboratories, Inc., Edison, NJ (NJ Laboratory ID Cert. No. 12028). Hexavalent chromium (Cr^{+6}) samples were prepared and analyzed using USEPA SW-846 methods 3060A and 7196A. Total metals samples were prepared and analyzed using USEPA SW-846 methods 3050B (3010A for aqueous samples) and 6010B. Oxidation / Reduction Potential (ORP) characteristics were determined by measurement of pH / Eh values for samples and subsequent extrapolation against the $HCrO_4$- / $Cr(OH)_3$ phase diagram; pH and Eh values were measured by Standard Methods 4500H-B and 2580B, respectively.

A summary table of samples analyzed is presented below. Please note that the number of 'Total Samples' listed below is exclusive of associated QC samples (MS / MD).

Sample ID 108_-	Lab ID 460-22912-	Matrix	Date Collected	Analysis	
				Hex Cr	Metals
D008_0.0	1	S	02/08/11	X	X
D008_4.0	2	S	02/08/11	X	X
D008_7.5	3	S	02/08/11	X	X
D008_11.5	4	S	02/08/11	X	X
D008_15.5	5	S	02/08/11	X	X
D008_18.0	6	S	02/08/11	X	X
J008_0.0	7	S	02/08/11	X	X
J008_3.5	8	S	02/08/11	X	X
J008_7.5	9	S	02/08/11	X	X
J008_11.5	10	S	02/08/11	X	X
J008_15.5	11	S	02/08/11	X	X
J008_15.5	11MSS	S	02/08/11	X	X
Sample ID 107_-	Lab ID 460-22912-	Matrix	Date Collected		
K034_0.0	12	S	02/08/11	X	X
K034_3.5	13	S	02/08/11	X	X
K034_7.5	14	S	02/08/11	X	X
K034_11.5	15	S	02/08/11	X	X
K034_15.5	16	S	02/08/11	X	X
K034_19.5	17	S	02/08/11	X	X
M046_0.0	18	S	02/08/11	X	X
M046_3.5	19	S	02/08/11	X	X
M046_8.0	20	S	02/08/11	X	X
M046_12.0	21	S	02/08/11	X	X
M046_16.0	22	S	02/08/11	X	X
FB020811	23FB	A	02/08/11	X	X

S = Non-Aqueous Matrix
A = Aqueous Matrix

Total Samples = 24
Bold Type indicates sample taken as a Batch QC sample

All samples were received one day following collection. Samples were received on ice at recorded temperature of 2.1 ^{o}C, in good condition.

SECTION C
Hexavalent Chromium

Holding times from sample collection to analysis ($\leq$24 hours for aqueous matrix; $\leq$30 days for non-aqueous matrix) were met for all samples.

All calibration and QC criteria were met for this sample group, including: initial calibration linearity, continuing calibration frequency and accuracy, blanks, duplicate precision, and matrix and post-spike recoveries. Reported spike recoveries, duplicate precision values, reported % moisture (% solids) and reported Cr^{+6} results were randomly verified from the raw data with no disparities between reported and calculated results found.

Cr^{+6} was not detected in Field Blank FB-1.

SECTION D
Total Metals

Holding times from sample collection to analysis were met for all total metals samples.

Calibration and QC criteria were met for this sample group, including: initial calibration linearity, continuing calibration frequency and accuracy, blanks, interference checks, LCS recoveries and serial dilution sample precision, *with the exceptions detailed below*. Reported spike recoveries, duplicate precision values, reported % moisture (% solids) and reported metal results were randomly verified from the raw data with no disparities between reported and calculated results found.

The recoveries for chromium (Cr) and vanadium (V) in the matrix spike of sample 460-22948-9 were reported below the lower limit of 75%, at 66% and 66%, respectively. The associated LCS recoveries for Cr and V were within acceptable limits, indicating analytical process control. *It is noted that this batch spike sample was not from this SDG's samples,but was from this site, and thus may be considered as representative of this SDG's sample matrix characteristics.*

- QA Action: Qualify Cr and V results in in associated field samples (460-22912-14 through -22) as estimated values 'UJ' or 'J', with indication of low bias due to matrix effects.

It is noted that no post-digestion spike samples were reported for this delivery group. Serial dilution samples were reported ; however, for Cr and V, none of the reported results were above the minimum threshold values for meaningful precision interpretation. Therefore, the indication of low bias for associated Cr and V results based on matrix spike recovery is maintained.

No positive element results were reported for the field blank sample (FB-1).

SECTION E
pH / Eh (ORP)

Samples for pH analysis were analyzed outside the method-defined holding-time of 15 minutes, which is essentially a 'field-performed' analysis. The laboratory assigned all reported pH results an 'HF' qualifier flag to indicate this exception. Since the samples were chilled on receipt at the lab, and analyzed within one day of receipt, no data validation qualifiers were assigned.

Calibrations for pH analysis were acceptable, as were required QC criteria (sample duplicates). Standard mV solution checks for Eh (Light's solution) were within acceptable ranges, as were sample duplicate measurements.

Reported pH and eH (ORP) values and resulting ReDox (reducing or oxidizing) characteristics were randomly verified from the $HCrO_4$- / $Cr(OH)_3$ phase diagram; no disparities relative to reported values and characteristics were found. These values are only used for data assessment purposes when Cr^{+6} sample spike recoveries are outside acceptable recovery ranges.

SECTION F
COLLOCATED SAMPLES

No collocated samples were identified for this SDG.

SECTION G
Overall Recommendations

The results of the review and validation process for the above analytical fractions and associated samples are summarized on the attached standard-format NJDEP Data Validation Report Forms, in order to facilitate the end-user's' review of these data.

Very truly yours,
Environmental Quality Associates, Inc.

Chris W. Taylor
Vice President

20 May, 2011

Dresdner-Robin Environmental Management
Att: Mr. Douglas Neumann, Director
371 Warren Street
Jersey City, New Jersey 07302

Re: PPG – Sites 107 and 108, Laboratory Job No. 460-22948-1

Dear Mr. Neumann,

This cover letter, and the attached documents, detail the data validation findings associated with the following sample analytical results contained in the above-referenced deliverables set:

Site Name: PPG – Sites 107 and 108

Fractions
Hexavalent chromium (Cr^{+6}) Laboratory: TestAmerica Laboratories, Inc.
Total Metals (Cr, Ni, Sb, Tl, V)
pH / Eh ; ORP

Report No.: 460-22948-1 Matrix: Non-Aqueous

Reviewer: Chris Taylor

Prepared By: Environmental Quality Associates, Inc.
487 Shoddy Hollow Road
Middletown, New York 10940

SECTION A
Sample Information

The above-noted laboratory Job Number samples were analyzed by TestAmerica Laboratories, Inc., Edison, NJ (NJ Laboratory ID Cert. No. 12028). Hexavalent chromium (Cr^{+6}) samples were prepared and analyzed using USEPA SW-846 methods 3060A and 7196A. Total metals samples were prepared and analyzed using USEPA SW-846 methods 3050B (3010A for aqueous samples) and 6010B. Oxidation / Reduction Potential (ORP) characteristics were determined by measurement of pH / Eh values for samples and subsequent extrapolation against the $HCrO_4$- / $Cr(OH)_3$ phase diagram; pH and Eh values were measured by Standard Methods 4500H-B and 2580B, respectively.

A summary table of samples analyzed is presented below. Please note that the number of 'Total Samples' listed below is exclusive of associated QC samples (MS / MD).

Sample 108_D012_0.0 (22948-6) was not analyzed for Cr^{+6} or ICP metals; no reason was noted.

Site ID	Sample ID	Lab ID 460-22948-	Matrix	Date Collected	Analysis	
					Hex Cr	Metals
107_	M038_0.0	1	S	02/09/11	X	X
107_	M038_3.5	2	S	02/09/11	X	X
107_	M038_8.0	3	S	02/09/11	X	X
107_	M038_12.0	4	S	02/09/11	X	X
107_	M038_16.0	5	S	02/09/11	X	X
108_	D012_0.0	6	S	02/09/11	X	X
108_	D012_3.5	7	S	02/09/11	X	X
108_	D012_6.0	8	S	02/09/11	X	X
108_	D012_11.0	**9**	S	02/09/11	X	X
108_	D012_15.0	10	S	02/09/11	X	X
108_	D012_15.0	10MSS	S	02/09/11	X	X
108_	D012_19.0	11	S	02/09/11	X	X
108_	D012_19.0	11MSS	S	02/09/11	X	X
108_	D012_23.0	12	S	02/09/11	X	X
107_	M036_0.0	13	S	02/09/11	X	X
107_	M036_3.5	14	S	02/09/11	X	X
107_	M036_7.5	15	S	02/09/11	X	X
107_	M036_8.5	16	S	02/09/11	X	X
107_	M036_12.5	17	S	02/09/11	X	X
107_	M036_16.5	18	S	02/09/11	X	X
108_	D006_0.0	**19**	S	02/09/11	X	X
108_	D006_3.5	20	S	02/09/11	X	X
108_	D006_6.5	21	S	02/09/11	X	X
108_	D006_10.5	22	S	02/09/11	X	X
108_	D006_14.5	23	S	02/09/11	X	X
108_	D006_18.5	24	S	02/09/11	X	X
---	REP-020911-1	25	S	02/09/11	X	X
---	FB020911	26FB	A	02/09/11	X	X
107_	M044_0.5	27	S	02/09/11	X	X
107_	M044_3.5	28	S	02/09/11	X	X
107_	M044_7.5	29	S	02/09/11	X	X
107_	M044_11.5	30	S	02/09/11	X	X
107_	M044_15.5	31	S	02/09/11	X	X
107_	M042_0.5	32	S	02/09/11	X	X
107_	M042_3.5	33	S	02/09/11	X	X
107_	M042_7.5	34	S	02/09/11	X	X

Site ID	Sample ID	Lab ID 460-22948-	Matrix	Date Collected	Analysis	
					Hex Cr	Metals
107_	M042_8.5	35	S	02/09/11	X	X
107_	M042_12.5	36	S	02/09/11	X	X
107_	M042_16.5	37	S	02/09/11	X	X
107_	M040_0.5	38	S	02/09/11	X	X
107_	M040_3.5	**39**	S	02/09/11	X	X
107_	M040_7.5	40	S	02/09/11	X	X
107_	M040_8.5	41	S	02/09/11	X	X
107_	M040_12.5	42	S	02/09/11	X	X
107_	M040_16.5	43	S	02/09/11	X	X

S = Non-Aqueous Matrix Total Samples = 43
A = Aqueous Matrix **Bold Type** indicates sample taken as a Batch QC sample

All samples were received one day after collection. Samples were received on ice at recorded temperatures of 4.0°C.

SECTION C
Hexavalent Chromium

Holding times from sample collection to analysis (≤24 hours for aqueous matrix; ≤30 days for non-aqueous matrix) were met for all samples.

All calibration criteria were met for this sample group, including: initial calibration linearity and continuing calibration frequency and accuracy. Method and calibration blanks were free of contamination. Reported spike recoveries, duplicate precision values, reported % moisture (% solids) and reported Cr^{+6} results were randomly verified from the raw data with no disparities between reported and calculated results found.

Cr^{+6} was not detected in Field Blank FB-1.

Matrix spike recoveries for soluble and insoluble Cr^{+6} in sample 460-22948-39 (107_M040_3.5) were below the allowable limit of 75% in both initial and re-analyses, with recoveries below 50%, as tabulated below.

Sample ID	Sol.Recov.	Insol.Recov.
22948-39	23%	38%
re-analysis	33%	57%

- QA Action: Qualify Cr^{+6} results in batch samples associated with 460-22948-39 (samples 29 – 43) as rejected, 'R', per NJDEP SOP No. 5.A.10, Rev.3, Sect. VI.(D).7.D.8)e). See Data Usability comments below.

- Data Usability: Eh / pH results were evaluated to determine ReDox characteristics of batch samples as an indicator of ability to support Cr^{+6}. The following associated batch samples were characterized as "Reducing" based upon the Method 3060A, Table 2 phase diagram: 460-22948- 30, -31, -36, -37, -38, -39, -40, -42 and -43; these samples are not likely to support the presence of Cr^{+6}, or if positive, may be low-biased.

SECTION D
Total Metals

Holding times from sample collection to analysis were met for all total metals samples.

Calibration and QC criteria were met for this sample group, including: initial calibration linearity, continuing calibration frequency and accuracy, blanks, interference checks, matrix spike recoveries, duplicate precision, LCS recoveries and serial dilution sample precision, *with the exception detailed below*. Reported spike recoveries, duplicate precision values, reported % moisture (% solids) and reported metal results were randomly verified from the raw data with no disparities between reported and calculated results found.

The recoveries for chromium (Cr) and vanadium (V) in the matrix spike of sample 108_D012_11.0 (Lab ID# 460-22948-9) were below the limit of 75%, at 66% and 66%. The associated LCS recoveries for Cr and V were within acceptable limits, indicating analytical process control.

- QA Action: Qualify Cr and V results in associated samples 460-22948-1 through -9 (inclusive) as estimated, 'UJ' or 'J', with indication of low bias due to sample matrix effects.

It is noted that no post-digestion spike samples were reported for this delivery group. Serial dilution samples were reported, with acceptable precision shown.

No positive element results were reported for the field blank sample (FB-1).

SECTION E
pH / Eh (ORP)

Samples for pH analysis were analyzed outside the method-defined holding-time of 15 minutes, which is essentially a 'field-performed' analysis. The laboratory assigned all reported pH results an 'HF' qualifier flag to indicate this exception. Since the samples were chilled on receipt at the lab, and analyzed within one day of receipt, no data validation qualifiers were assigned.

Calibrations for pH analysis were acceptable, as were required QC criteria (sample duplicates). Standard mV solution checks for Eh (Light's solution) were within acceptable ranges, as were sample duplicate measurements.

Reported pH and eH (ORP) values and resulting ReDox (reducing or oxidizing) characteristics were randomly verified from the $HCrO_4$- / $Cr(OH)_3$ phase diagram; no disparities relative to reported values and characteristics were found. These values are only used for data assessment purposes when Cr^{+6} sample spike recoveries are outside acceptable recovery ranges; refer to the data usability section above.

SECTION F
COLLOCATED SAMPLES

107_REP020911-1 was identified as being collocated with 107_M036_3.5 (460-22948-14). Precision results (as %RPD) are tabulated below. Note: ND = Not Detected ; nc = not calculated ; * = absolute difference is shown if either sample <5x CRQL

	M036_3.5	R020911-1	%RPD
Chromium	58.9	60.2	2.2
Nickel	29.2	34.5	5.3 *
Antimony	2.2	1.0	1.2 *
Thallium	ND	ND	nc
Vanadium	102	71.8	34.8
Cr (VI)	ND	ND	nc

The NJDEP DV guidance protocols do not provide qualification thresholds for field duplicate precision values; however, EPA Region II data validation guidance (SOP No. HW-2, Rev. 13, Sept. 2006) provides for a qualification range of >35%, <120% RPD for soils >5x CRQL values, and difference >2x CRQL if either sample is <5x CRQL. No QA action is necessary based on the above field duplicate precision results.

SECTION G
Overall Recommendations

The results of the review and validation process for the above analytical fractions and associated samples are summarized on the attached standard-format NJDEP Data Validation Report Forms, in order to facilitate the end-user's' review of these data.

Very truly yours,
Environmental Quality Associates, Inc.

Chris W. Taylor
Vice President