

LABORATORY DATA CONSULTANTS, INC.

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ERM
5761 N. Church Street
Glen Rock, PA 17327
ATTN: Mr. Jeff Boggs

March 31, 2014

SUBJECT: Revised Harbor Point, MD, Hexavalent Chromium Monitoring, Data Validation

Dear Mr. Boggs,

Enclosed is the revised validation report for fraction listed below. Please replace the previously submitted report with the enclosed revised report.

LDC Project # 31460:

SDG

4031009

Fraction

Hexavalent Chromium

Please feel free to contact us if you have any questions.

Sincerely,

Christina Rink
Project Manager/Chemist

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: Harbor Point, MD, Hexavalent Chromium Monitoring
Collection Date: March 6 through March 7, 2014
LDC Report Date: March 31, 2014
Matrix: Air
Parameters: Hexavalent Chromium
Validation Level: EPA Level IV
Laboratory: Eastern Research Group
Sample Delivery Group (SDG): 4031009

Sample Identification

OAM 2
OAM 1
PAM-1D
PAM-1
PAM-21
PAM-31
OAM 2DUP

Introduction

This data review covers 7 air samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per ASTM D7614 for Hexavalent Chromium.

This review follows the Air Monitoring Program Quality Assurance Project Plan, Area 1, Phase 1 Development, Version 1, Baltimore Works Site, Baltimore, Maryland (March 2014) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review (January 2010).

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- NJ Presumptive evidence of presence of the compound at an estimated quantity.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

II. Initial Calibration

All criteria for the initial calibration were met.

III. Calibration verification

Calibration verification frequency and analysis criteria were met.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No hexavalent chromium was found in the method blanks.

Sample PAM-21 was identified as a field blank. No hexavalent chromium was found.

Sample PAM-31 was identified as a trip blank. No hexavalent chromium was found.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) analysis was not required by the method.

VI. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Relative percent differences (RPD) were within QC limits.

VII. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Sample Result Verification

All sample result verifications were acceptable.

IX. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

X. Field Duplicates

Samples PAM-1D and PAM-1 were identified as field duplicates. No hexavalent chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (ng/m ³)		RPD (Limits)	Flags	A or P
	PAM-1D	PAM-1			
Hexavalent chromium	0.0036U	0.0146	121 (≤20)	NQ	-

NQ = One or both results were < 5x the reporting limit, therefore no data were qualified.

**Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Data Qualification Summary - SDG 4031009**

No Sample Data Qualified Due to QA/QC Exceedences in this SDG

**Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG
4031009**

No Sample Data Qualified Due to Laboratory Blank Contamination in this
SDG

**Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Field Blank Data Qualification Summary - SDG 4031009**

No Sample Data Qualified Due to Field Blank Contamination in this SDG

ASTM D7614

METHOD: Hexavalent Chromium (Laboratory SOP ERG-MOR-063, Revision 10)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

Validation Area			Comments
I.	Technical holding times	A	Sampling dates: 3/7/14, 3/6/14
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Blanks	A	
V	Matrix Spike/Matrix Spike Duplicates	N	Not required
VI.	Duplicates	A	
VII.	Laboratory control samples	A	LCS/D
VIII.	Sample result verification	A	All detected results, were recalculated ^{initial calibration and}
IX.	Overall assessment of data	A	initial calibration and batch of 5 re saw dat
X.	Field duplicates	SW (3,4)	
XI.	Field blanks	ND	FB=5 TB=6

Note: A = Acceptable ND = No compounds detected D = Duplicate
 N = Not provided/applicable R = Rinsate TB = Trip blank
 SW = See worksheet FB = Field blank EB = Equipment blank

Validated Samples: air

1	OAM 2	11		21		31	
2	OAM 1	12		22		32	
3	PAM-1D	13		23		33	
4	PAM-1	14		24		34	
5	PAM-21	15		25		35	
6	PAM-31	16		26		36	
7	OAM 2DUP	17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes: _____

Method: Inorganics (EPA Method recovery)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients ≥ 0.995 ?	✓			
Were all initial and continuing calibration verification %Rs within the ^{85-115%} 90-110% QC limits?	✓			
Were titrant checks performed as required? (Level IV only)			✓	
Were balance checks performed as required? (Level IV only)			✓	
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. Matrix spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.			✓	
Were the MS/MSD or duplicate relative percent differences (RPD) $\leq 20\%$ for waters and $\leq 35\%$ for soil samples? A control limit of $\leq \text{CRDL}$ ($\leq 2\text{X CRDL}$ for soil) was used for samples that were $\leq 5\text{X}$ the CRDL, including when only one of the duplicate sample values were $< 5\text{X}$ the CRDL.	✓			
V. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

Validation Area	Yes	No	NA	Findings/Comments
VII. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were detection limits < RL?	✓			
VIII. Overall assessment of data				
Overall assessment of data was found to be acceptable:	✓			
IX. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target analytes were detected in the field duplicates.	✓			
X. Field blanks				
Field blanks were identified in this SDG.	✓			
Target analytes were detected in the field blanks.		✓		

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Method: Inorganics (see cover)

Analyte	Concentration (ng/m ³)		RPD (≤ 20)	Qualifiers (Parents Only)
	3	4		
Hexavalent Chromium	0.0036U	0.0146	121	NQ

NQ= no qualifiers - data is <5x RL

LDC #: 31460A6

Validation Findings Worksheet
Initial and Continuing Calibration Calculation Verification

Page: 1 of 1
 Reviewer: CR
 2nd Reviewer: lw

Method: Inorganics, Method See Cover

The correlation coefficient (r) for the calibration of Cr⁶⁺ was recalculated. Calibration date: 3/10/14

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$$\%R = \frac{\text{Found} \times 100}{\text{True}}$$
 Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution
 True = concentration of each analyte in the ICV or CCV source

Type of analysis	Analyte	Standard	Conc. (mg/L)	Area	Recalculated	Reported	Acceptable (Y/N)
					r or r ²	r or r ²	
Initial calibration	Cr ⁶⁺	s1	0.1	0.0000194	0.99994	0.99994	Y
		s2	0.1	0.000045			
		s3	0.2	0.00009			
		s4	0.5	0.0002359			
		s5	1	0.0004753			
		s6	2	0.0009755			
Calibration verification		ICV	0.5	0.5104	102	-	Y
Calibration verification		CCV	0.5	0.5131	103	-	
Calibration verification		CCV	0.5	0.5080	102	-	

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 3146A

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: QR
2nd Reviewer: [Signature]

METHOD: Inorganics, Method Seecover

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$$\%R = \frac{\text{Found}}{\text{True}} \times 100$$
 Where, Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$$RPD = \frac{|S-D|}{(S+D)/2} \times 100$$
 Where, S = Original sample concentration
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated	Reported	Acceptable (Y/N)
					%R / RPD	%R / RPD	
LCS	Laboratory control sample	Cd^{6+}	0.471	0.463	102	102	Y
N	Matrix spike sample		(SSR-SR)				
7	Duplicate sample	Cd^{6+}	ND	ND	—	—	Y

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.



CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495 FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 03/12/14 13:35

SUBMITTED: 03/08/14

AQS SITE CODE:

SITE CODE: Honeywell Hex Chrome Study

Description: OAM 2	Lab ID: 4031009-01	Sampled: 03/07/14 13:11
Matrix: Air	Sample Volume: 21.73 m ³	Received: 03/08/14 09:49
Comments:		Analysis Date: 03/10/14 15:12

Hexavalent Chromium

Results

MDL

Analyte	CAS Number	ng/m³ Air	Flag	ng/m³ Air
Hexavalent Chromium	1854-02-99	ND	U	0.0036

02/3/14

Eastern Research Group

The results in this report apply only to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



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Environmental Resources Management, Inc

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FILE #: 3926.00

REPORTED: 03/12/14 13:35

SUBMITTED: 03/08/14

AQS SITE CODE:

SITE CODE: Honeywell Hex Chrome Study

Description: OAM 1

Lab ID: 4031009-02

Sampled: 03/07/14 12:25

Matrix: Air

Sample Volume: 21.44 m³

Received: 03/08/14 09:49

Comments:

Analysis Date: 03/10/14 15:32

Hexavalent Chromium

Results

MDL

Analyte	CAS Number	ng/m ³ Air	Flag	ng/m ³ Air
Hexavalent Chromium	1854-02-99	ND	U	0.0036

023/13/14

Eastern Research Group

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FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 03/12/14 13:35

SUBMITTED: 03/08/14

AQS SITE CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-1D

Lab ID: 4031009-03

Sampled: 03/07/14 11:28

Matrix: Air

Sample Volume: 21.63 m³

Received: 03/08/14 09:49

Comments: Col 2

Analysis Date: 03/10/14 15:42

Hexavalent Chromium

Results

MDL

Analyte	CAS Number	ng/m ³ Air	Flag	ng/m ³ Air
Hexavalent Chromium	1854-02-99	ND	U	0.0036

03/13/14

Eastern Research Group

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Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495 FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 03/12/14 13:35

SUBMITTED: 03/08/14

AQS SITE CODE:

SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1	Lab ID: 4031009-04	Sampled: 03/07/14 11:08
Matrix: Air	Sample Volume: 21.24 m ³	Received: 03/08/14 09:49
Comments: Col 1		Analysis Date: 03/10/14 15:51

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u> <u>ng/m³ Air</u>	<u>Flag</u>	<u>MDL</u> <u>ng/m³ Air</u>
Hexavalent Chromium	1854-02-99	0.0146		0.0036

02/13/14



CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495 FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 03/12/14 13:35

SUBMITTED: 03/08/14

AQS SITE CODE:

SITE CODE: Honeywell Hex Chrome Study

Description: PAM-21	Lab ID: 4031009-05	Sampled: 03/07/14 12:10
Matrix: Air	Sample Volume: 21.4 m ³	Received: 03/08/14 09:49
Comments:		Analysis Date: 03/10/14 16:01

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u> ng/m ³ Air	<u>Flag</u>	<u>MDL</u> ng/m ³ Air
Hexavalent Chromium	1854-02-99	ND	U	0.0036

023/13/14



CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495 FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 03/12/14 13:35

SUBMITTED: 03/08/14

AQS SITE CODE:

SITE CODE: Honeywell Hex Chrome Study

Description: PAM-31

Lab ID: 4031009-06

Sampled: 03/07/14 13:00

Matrix: Air

Sample Volume: 21.4 m³

Received: 03/08/14 09:49

Comments:

Analysis Date: 03/10/14 16:11

Hexavalent Chromium

Results

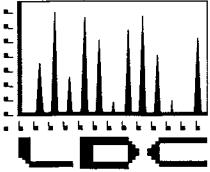
MDL

Analyte	CAS Number	ng/m ³ Air	Flag	ng/m ³ Air
Hexavalent Chromium	1854-02-99	ND	U	0.0036

CE-3/13/14

Eastern Research Group

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LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

ERM
5761 N. Church Street
Glen Rock, PA 17327
ATTN: Mr. Jeff Boggs

March 31, 2014

SUBJECT: Revised Harbor Point, MD, Hexavalent Chromium Monitoring, Data Validation

Dear Mr. Boggs,

Enclosed is the revised validation report for fraction listed below. Please replace the previously submitted report with the enclosed revised report.

LDC Project # 31482:

SDG

4031106

Fraction

Hexavalent Chromium

Please feel free to contact us if you have any questions.

Sincerely,

Christina Rink
Project Manager/Chemist

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Harbor Point, MD, Hexavalent Chromium Monitoring
Collection Date: March 8 through March 10, 2014
LDC Report Date: March 31, 2014
Matrix: Air
Parameters: Hexavalent Chromium
Validation Level: EPA Level IV
Laboratory: Eastern Research Group
Sample Delivery Group (SDG): 4031106

Sample Identification

PAM-21 (03/08/14)
PAM-31 (03/08/14)
OAM 1 (03/08/14)
OAM 2 (03/08/14)
PAM-1D (03/08/14)
OAM 1 (03/09/14)
OAM 2 (03/09/14)
PAM-1 (03/09/14)
PAM-21 (03/09/14)
PAM-31 (03/09/14)
PAM-1D (03/09/14)
OAM 1 (03/10/14)
OAM 2 (03/10/14)
PAM-1 (03/10/14)
PAM-21 (03/10/14)
PAM-31 (03/10/14)
PAM-1D (03/10/14)
OAM 1 (03/08/14)DUP

Introduction

This data review covers 18 air samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per ASTM D7614 for Hexavalent Chromium.

This review follows the Air Monitoring Program Quality Assurance Project Plan, Area 1, Phase 1 Development, Version 1, Baltimore Works Site, Baltimore, Maryland (March 2014) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review (January 2010).

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- NJ Presumptive evidence of presence of the compound at an estimated quantity.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

II. Initial Calibration

All criteria for the initial calibration were met.

III. Calibration verification

Calibration verification frequency and analysis criteria were met.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No hexavalent chromium was found in the method blanks.

Samples PAM-21 (03/08/14), PAM-21 (03/09/14), and PAM-21 (03/10/14) were identified as field blanks. No hexavalent chromium was found.

Samples PAM-31 (03/08/14), PAM-31 (03/09/14), and PAM-31 (03/10/14) were identified as trip blanks. No hexavalent chromium was found.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) analysis was not required by the method.

VI. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Relative percent differences (RPD) were within QC limits

VII. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Sample Result Verification

All sample result verifications were acceptable.

Sample PAM-1 (03/08/14) was torn before analysis; therefore, the sample is to be voided.

IX. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

X. Field Duplicates

Samples PAM-1 (03/09/14) and PAM-1D (03/09/14) and samples PAM-1 (03/10/14) and PAM-1D (03/10/14) were identified as field duplicates. No hexavalent chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (ng/m ³)		RPD (Limits)	Flags	A or P
	PAM-1 (03/09/14)	PAM-1D (03/09/14)			
Hexavalent chromium	0.0215	0.0251	15 (≤20)	-	-

Analyte	Concentration (ng/m ³)		RPD (Limits)	Flags	A or P
	PAM-1 (03/10/14)	PAM-1D (03/10/14)			
Hexavalent chromium	0.0572	0.0476	18 (≤20)	-	-

**Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Data Qualification Summary - SDG 4031106**

No Sample Data Qualified Due to QA/QC Exceedences in this SDG

**Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG
4031106**

No Sample Data Qualified Due to Laboratory Blank Contamination in this
SDG

**Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Field Blank Data Qualification Summary - SDG 4031106**

No Sample Data Qualified Due to Field Blank Contamination in this SDG

METHOD: Hexavalent Chromium (ASTM D7614)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: <u>3/8-10/14</u>
II.	Initial calibration	A	
III.	Calibration verification	A	
IV.	Blanks	A	
V.	Matrix Spike/Matrix Spike Duplicates	N	<u>not required</u>
VI.	Duplicates	A	
VII.	Laboratory control samples	A	<u>LCS/D</u>
VIII.	Sample result verification	A	<u>Recalibration on detectors, calibration, & bench C</u>
IX.	Overall assessment of data	A	
X.	Field duplicates	SW	<u>(5,6) or (9,12) (15,18)</u>
XI.	Field blanks	NO	<u>FB=1,10,16 TB=2,11,17</u>

Note: A = Acceptable ND = No compounds detected D = Duplicate
 N = Not provided/applicable R = Rinsate TB = Trip blank
 SW = See worksheet FB = Field blank EB = Equipment blank

Validated Samples: Ass

1	PAM-21 (03/08/14)	11	PAM-31 (03/09/14)	21	31
2	PAM-31 (03/08/14)	12	PAM-1D (03/09/14)	22	32
3	OAM 1 (03/08/14)	13	OAM 1 (03/10/14)	23	33
4	OAM 2 (03/08/14)	14	OAM 2 (03/10/14)	24	34
5	PAM-1 (03/08/14) *	15	PAM-1 (03/10/14)	25	35
6	PAM-1D (03/08/14)	16	PAM-21 (03/10/14)	26	36
7	OAM 1 (03/09/14)	17	PAM-31 (03/10/14)	27	37
8	OAM 2 (03/09/14)	18	PAM-1D (03/10/14)	28	38
9	PAM-1 (03/09/14)	19	OAM 1 (03/08/14)DUP	29	39
10	PAM-21 (03/09/14)	20		30	40

Notes: * VOID - torn filter (xxx)

Method: Inorganics (EPA Method recovery)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients > 0.995?	✓			
Were all initial and continuing calibration verification %Rs within the ^{85-115%} 90-110% QC limits?	✓			
Were titrant checks performed as required? (Level IV only)			✓	
Were balance checks performed as required? (Level IV only)			✓	
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. Matrix spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.			✓	
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL (≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were < 5X the CRDL.	✓			
V. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 31482AG

VALIDATION FINDINGS CHECKLIST

Page: 2 of 2
 Reviewer: OL
 2nd Reviewer: _____

Validation Area	Yes	No	NA	Findings/Comments
VII. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were detection limits < RL?	✓			
VIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
IX. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target analytes were detected in the field duplicates.	✓			
X. Field blanks				
Field blanks were identified in this SDG.	✓			
Target analytes were detected in the field blanks.		✓		

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Method: Inorganics (see cover)

CR

Analyte	Concentration (ng/m ³)		RPD (≤ 20)	Qualifiers (Parents Only)
	5	6		
Hexavalent Chromium	0.0038U	0.0192	137	NQ

NQ= no qualifiers - data is <5x RL

Analyte	Concentration (ng/m ³)		RPD (≤ 20)	Qualifiers (Parents Only)
	9	12		
Hexavalent Chromium	0.0215	0.0251	15	

Analyte	Concentration (ng/m ³)		RPD (≤ 20)	Qualifiers (Parents Only)
	15	18		
Hexavalent Chromium	0.0572	0.0476	18	

LDC #: 31482A6

Validation Findings Worksheet
Initial and Continuing Calibration Calculation Verification

Page: 1 of 1
 Reviewer: [Signature]
 2nd Reviewer: [Signature]

Method: Inorganics, Method See Cover

The correlation coefficient (r) for the calibration of C⁶⁺ was recalculated. Calibration date: 3/11/14

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$$\%R = \frac{\text{Found} \times 100}{\text{True}}$$
 Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution
 True = concentration of each analyte in the ICV or CCV source

Type of analysis	Analyte	Standard	Conc. (mg/L)	Area	Recalculated	Reported	Acceptable (Y/N)
					r or r ²	r or r ²	
Initial calibration	C ⁶⁺	s1	0.1	0.0000186	0.99994	0.99994	Y
		s2	0.1	0.0000403			
		s3	0.2	0.0000866			
		s4	0.5	0.0002204			
		s5	1	0.0004554			
		s6	2	0.0009314			
Calibration verification		ICV	0.5	0.5108	102	-	
Calibration verification		CCV		0.5369	107	-	
Calibration verification				0.5042	101	-	

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 31482A6

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: QR
2nd Reviewer: W

METHOD: Inorganics, Method see cover

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$$\%R = \frac{\text{Found}}{\text{True}} \times 100$$
 Where, Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$$RPD = \frac{|S-D|}{(S+D)/2} \times 100$$
 Where, S = Original sample concentration
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated	Reported	Acceptable (Y/N)
					%R / RPD	%R / RPD	
LCS	Laboratory control sample	Cd^{6+}	0.462	0.463	99.8	99.9	Y
N	Matrix spike sample		(SSR-SR)				
19	Duplicate sample	Cd^{6+}	0.0208	0.0214	2.96	2.96	Y

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 3466

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
 Reviewer: OR
 2nd reviewer: [Signature]

METHOD: Inorganics, Method see cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

- Y N N/A Have results been reported and calculated correctly?
- Y N N/A Are results within the calibrated range of the instruments?
- Y N N/A Are all detection limits below the CRQL?

Compound (analyte) results for Cr⁶⁺ reported with a positive detect were recalculated and verified using the following equation:

Concentration =
$$\frac{\text{Area} - \text{Intercept}}{\text{Slope}} \left(\frac{\text{Final Vol}}{\text{A/C Vol}} \right)$$
 Recalculation:
$$\frac{0.0000106 + 0.0000083Z}{0.0004682} \times \frac{10 \text{ mL}}{21.0 \text{ m}^3} = 0.019206 \text{ mg/m}^3$$

#	Sample ID	Analyte	Reported Concentration (mg/m ³)	Calculated Concentration (mg/m ³)	Acceptable (Y/N)
	6	Cr ⁶⁺	0.0192	0.0192	Y
	9	↓	0.0215	0.0215	Y
	12		0.0251	0.0251	Y
	13		0.0272	0.0272	Y
	14		0.0277	0.0277	Y
	15		0.0572	0.0572	Y
	18		0.0476	0.0476	Y

Note: _____



CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495 FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 03/14/14 11:15

SUBMITTED: 03/11/14

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-21	Lab ID: 4031106-01	Sampled: 03/08/14 13:40
Matrix: Air	Sample Volume: 20.74 m ³	Received: 03/11/14 11:06
Comments:		Analysis Date: 03/11/14 17:09

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u>		<u>MDL</u>
		<u>ng/m³ Air</u>	<u>Flag</u>	
Hexavalent Chromium	1854-02-99	ND	U	0.0036

023/14/14



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FILE #: 3926.00

REPORTED: 03/14/14 11:15

SUBMITTED: 03/11/14

AQS SITE

CODE: Honeywell Hex Chrome Study
SITE CODE:

Description: PAM-31	Lab ID: 4031106-02	Sampled: 03/08/14 13:14
Matrix: Air	Sample Volume: 21.74 m ³	Received: 03/11/14 11:06
Comments:		Analysis Date: 03/11/14 17:19

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u> <u>ng/m³ Air</u>	<u>Flag</u>	<u>MDL</u> <u>ng/m³ Air</u>
Hexavalent Chromium	1854-02-99	ND	U	0.0036

023/14/14



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FILE #: 3926.00

REPORTED: 03/14/14 11:15

SUBMITTED: 03/11/14

AQS SITE

CODE:
SITE CODE:

Honeywell Hex Chrome Study

Description: OAM 1	Lab ID: 4031106-03	Sampled: 03/08/14 11:55
Matrix: Air	Sample Volume: 20.77 m ³	Received: 03/11/14 11:06
Comments:		Analysis Date: 03/11/14 16:20

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u>		<u>MDL</u>
		<u>ng/m³ Air</u>	<u>Flag</u>	
Hexavalent Chromium	1854-02-99	0.0214		0.0036

02/14/14



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FILE #: 3926.00

REPORTED: 03/14/14 11:15

SUBMITTED: 03/11/14

AQS SITE

CODE: Honeywell Hex Chrome Study
SITE CODE:

Description: OAM 2	Lab ID: 4031106-04	Sampled: 03/08/14 12:47
Matrix: Air	Sample Volume: 20.74 m ³	Received: 03/11/14 11:06
Comments:		Analysis Date: 03/11/14 16:40

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u>		<u>MDL</u>
		<u>ng/m³ Air</u>	<u>Flag</u>	
Hexavalent Chromium	1854-02-99	ND	U	0.0036

023/14/14



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FILE #: 3926.00

REPORTED: 03/14/14 11:15

SUBMITTED: 03/11/14

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1D	Lab ID: 4031106-06	Sampled: 03/08/14 11:20
Matrix: Air	Sample Volume: 21.04 m ³	Received: 03/11/14 11:06
Comments: Col 2		Analysis Date: 03/11/14 16:59

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u>		<u>MDL</u>
		<u>ng/m³ Air</u>	<u>Flag</u>	<u>ng/m³ Air</u>
Hexavalent Chromium	1854-02-99	0.0192	D-F	0.0036

Handwritten signature/initials



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FILE #: 3926.00

REPORTED: 03/14/14 11:15

SUBMITTED: 03/11/14

AQS SITE

CODE- SITE CODE: Honeywell Hex Chrome Study

Description: OAM 1	Lab ID: 4031106-07	Sampled: 03/09/14 12:18
Matrix: Air	Sample Volume: 20.93 m ³	Received: 03/11/14 11:06
Comments: Sample collected on Daylight Savings Time		Analysis Date: 03/11/14 17:29

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u> ng/m ³ Air	<u>Flag</u>	<u>MDL</u> ng/m ³ Air
Hexavalent Chromium	1854-02-99	0.0185		0.0036

023/14/14



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FILE #: 3926.00

REPORTED: 03/14/14 11:15

SUBMITTED: 03/11/14

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: OAM 2	Lab ID: 4031106-08	Sampled: 03/09/14 12:59
Matrix: Air	Sample Volume: 20.76 m ³	Received: 03/11/14 11:06
Comments: Sample collected on Daylight Savings Time		Analysis Date: 03/11/14 17:39

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u>	<u>MDL</u>
		<u>ng/m³ Air</u>	<u>ng/m³ Air</u>
Hexavalent Chromium	1854-02-99	0.0234	0.0036

03/14/14

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FILE #: 3926.00

REPORTED: 03/14/14 11:15

SUBMITTED: 03/11/14

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-1	Lab ID: 4031106-09	Sampled: 03/09/14 11:24
Matrix: Air	Sample Volume: 20.75 m ³	Received: 03/11/14 11:06
Comments: Col 1 Sample collected on Daylight Savings Time		Analysis Date: 03/11/14 17:49

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u>		<u>MDL</u>
		<u>ng/m³ Air</u>	<u>Flag</u>	
Hexavalent Chromium	1854-02-99	0.0215		0.0036

023/14/14

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FILE #: 3926.00

REPORTED: 03/14/14 11:15

SUBMITTED: 03/11/14

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-21	Lab ID: 4031106-10	Sampled: 03/09/14 12:05
Matrix: Air	Sample Volume: 20.93 m ³	Received: 03/11/14 11:06
Comments: Sample collected on Daylight Savings Time		Analysis Date: 03/11/14 18:29

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u> ng/m ³ Air	<u>Flag</u>	<u>MDL</u> ng/m ³ Air
Hexavalent Chromium	1854-02-99	ND	U	0.0036

03/14/14

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FILE #: 3926.00

REPORTED: 03/14/14 11:15

SUBMITTED: 03/11/14

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-31	Lab ID: 4031106-11	Sampled: 03/09/14 12:09
Matrix: Air	Sample Volume: 20.93 m ³	Received: 03/11/14 11:06
Comments: Sample collected on Daylight Savings Time		Analysis Date: 03/11/14 18:38

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u>	<u>Flag</u>	<u>MDL</u>
		<u>ng/m³ Air</u>		<u>ng/m³ Air</u>
Hexavalent Chromium	1854-02-99	ND	U	0.0036

023/14/14

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Malvern, PA 19355

FILE #: 3926.00
REPORTED: 03/14/14 11:15
SUBMITTED: 03/11/14

ATTN: Mr. Jeff Boggs

AQS SITE
CODE: Honeywell Hex Chrome Study
SITE CODE:

PHONE: (443) 803-8495 FAX: (410) 266-8912

Description: PAM-1D	Lab ID: 4031106-12	Sampled: 03/09/14 11:33
Matrix: Air	Sample Volume: 21.57 m ³	Received: 03/11/14 11:06
Comments: Col 2 Sample collected on Daylight Savings Time		Analysis Date: 03/11/14 18:19

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u>		<u>MDL</u>
		<u>ng/m³ Air</u>	<u>Flag</u>	<u>ng/m³ Air</u>
Hexavalent Chromium	1854-02-99	0.0251		0.0036

03/14/14



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ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495 FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 03/14/14 11:15

SUBMITTED: 03/11/14

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: OAM 1

Lab ID: 4031106-13

Sampled: 03/10/14 11:47

Matrix: Air

Sample Volume: 20.86 m³

Received: 03/11/14 11:06

Comments:

Analysis Date: 03/11/14 18:48

Hexavalent Chromium

Analyte	CAS Number	Results		MDL
		ng/m ³ Air	Flag	ng/m ³ Air
Hexavalent Chromium	1854-02-99	0.0272		0.0036

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FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 03/14/14 11:15

SUBMITTED: 03/11/14

AQS SITE

CODE:
SITE CODE:

Honeywell Hex Chrome Study

Description: OAM 2

Lab ID: 4031106-14

Sampled: 03/10/14 12:27

Matrix: Air

Sample Volume: 20.96 m³

Received: 03/11/14 11:06

Comments:

Analysis Date: 03/11/14 18:58

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u>		<u>MDL</u>
		<u>ng/m³ Air</u>	<u>Flag</u>	
Hexavalent Chromium	1854-02-99	0.0277		0.0036

023/14/14



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Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495 FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 03/14/14 11:15

SUBMITTED: 03/11/14

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1	Lab ID: 4031106-15	Sampled: 03/10/14 10:32
Matrix: Air	Sample Volume: 20.75 m ³	Received: 03/11/14 11:06
Comments: Col 1		Analysis Date: 03/11/14 19:50

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u> <u>ng/m³ Air</u>	<u>Flag</u>	<u>MDL</u> <u>ng/m³ Air</u>
Hexavalent Chromium	1854-02-99	0.0572		0.0036

03/14/14



CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 03/14/14 11:15

SUBMITTED: 03/11/14

AQS SITE

CODE-
SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-21

Lab ID: 4031106-16

Sampled: 03/10/14 11:40

Matrix: Air

Sample Volume: 20.86 m³

Received: 03/11/14 11:06

Comments:

Analysis Date: 03/11/14 20:10

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u>		<u>MDL</u>
		<u>ng/m³ Air</u>	<u>Flag</u>	
Hexavalent Chromium	1854-02-99	ND	U	0.0036

03/14/14

Eastern Research Group

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Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355

FILE #: 3926.00
REPORTED: 03/14/14 11:15
SUBMITTED: 03/11/14

ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 FAX: (410) 266-8912

AQS SITE
CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-31	Lab ID: 4031106-17	Sampled: 03/10/14 11:46
Matrix: Air	Sample Volume: 20.86 m ³	Received: 03/11/14 11:06
Comments:		Analysis Date: 03/11/14 20:20

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u> ng/m ³ Air	<u>Flag</u>	<u>MDL</u> ng/m ³ Air
Hexavalent Chromium	1854-02-99	ND	U	0.0036

03/14/14



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FILE #: 3926.00

REPORTED: 03/14/14 11:15

SUBMITTED: 03/11/14

AQS SITE

CODE: SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-1D

Lab ID: 4031106-18

Sampled: 03/10/14 10:48

Matrix: Air

Sample Volume: 20.74 m³

Received: 03/11/14 11:06

Comments: Col 2

Analysis Date: 03/11/14 20:00

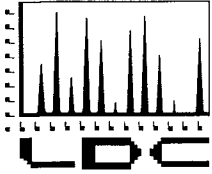
Hexavalent Chromium

Analyte	CAS Number	Results	Flag	MDL
		ng/m ³ Air		ng/m ³ Air
Hexavalent Chromium	1854-02-99	0.0476		0.0036

023/14/14

Eastern Research Group

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LABORATORY DATA CONSULTANTS, INC.

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

ERM
5761 N. Church Street
Glen Rock, PA 17327
ATTN: Mr. Jeff Boggs

March 31, 2014

SUBJECT: Revised Harbor Point, MD, Hexavalent Chromium Monitoring, Data Validation

Dear Mr. Boggs,

Enclosed is the revised validation report for fraction listed below. Please replace the previously submitted report with the enclosed revised report.

LDC Project # 31489:

SDG

Fraction

4031210/4031301

Hexavalent Chromium

Please feel free to contact us if you have any questions.

Sincerely,

Christina Rink
Project Manager/Chemist

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Harbor Point, MD, Hexavalent Chromium Monitoring
Collection Date: March 11 through March 12, 2014
LDC Report Date: March 31, 2014
Matrix: Air
Parameters: Hexavalent Chromium
Validation Level: EPA Level IV
Laboratory: Eastern Research Group
Sample Delivery Group (SDG): 4031210/4031301

Sample Identification

OAM 1 (03/11/14)
OAM 2 (03/11/14)
PAM-1 (03/11/14)
PAM-1D (03/11/14)
PAM-21 (03/11/14)
PAM-31 (03/11/14)
OAM 1 (03/12/14)
OAM 2 (03/12/14)
PAM-1 (03/12/14)
PAM-1D (03/12/14)
PAM-21 (03/12/14)
PAM-31 (03/12/14)
PAM-1 (03/11/14)DUP
PAM-1D (03/11/14)DUP
PAM-1 (03/12/14)DUP
PAM-1D (03/12/14)DUP

Introduction

This data review covers 16 air samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per ASTM D7614 for Hexavalent Chromium.

This review follows the Air Monitoring Program Quality Assurance Project Plan, Area 1, Phase 1 Development, Version 1, Baltimore Works Site, Baltimore, Maryland (March 2014) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review (January 2010).

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- NJ Presumptive evidence of presence of the compound at an estimated quantity.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

II. Initial Calibration

All criteria for the initial calibration were met.

III. Calibration verification

Calibration verification frequency and analysis criteria were met.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No hexavalent chromium was found in the method blanks.

Samples PAM-21 (03/11/14) and PAM-21 (03/12/14) were identified as field blanks. No hexavalent chromium was found.

Samples PAM-31 (03/11/14) and PAM-31 (03/12/14) were identified as trip blanks. No hexavalent chromium was found.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) analysis was not required by the method.

VI. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Relative percent differences (RPD) were within QC limits.

VII. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Sample Result Verification

All sample result verifications were acceptable.

IX. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

X. Field Duplicates

Samples PAM-1 (03/11/14) and PAM-1D (03/11/14) and samples PAM-1 (03/12/14) and PAM-1D (03/12/14) were identified as field duplicates. No hexavalent chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (ng/m ³)		RPD (Limits)	Flags	A or P
	PAM-1 (03/11/14)	PAM-1D (03/11/14)			
Hexavalent chromium	0.0697	0.0753	8 (≤20)	-	-

Analyte	Concentration (ng/m ³)		RPD (Limits)	Flags	A or P
	PAM-1 (03/11/14)	PAM-1D (03/11/14)			
Hexavalent chromium	0.0741	0.0771	4 (≤20)	-	-

**Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Data Qualification Summary - SDG 4031210/4031301**

No Sample Data Qualified Due to QA/QC Exceedences in this SDG

**Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG
4031210/4031301**

No Sample Data Qualified Due to Laboratory Blank Contamination in this
SDG

**Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Field Blank Data Qualification Summary - SDG
4031210/4031301**

No Sample Data Qualified Due to Field Blank Contamination in this SDG

METHOD: Hexavalent Chromium (ASTM D7614)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 3/11-12/14
II.	Initial calibration	A	
III.	Calibration verification	A	
IV.	Blanks	A	
V.	Matrix Spike/Matrix Spike Duplicates	N	Not required
VI.	Duplicates	A	DUP
VII.	Laboratory control samples	A	LCS/D
VIII.	Sample result verification	A	Detects, ICAL, CC, Batch of recalculated
IX.	Overall assessment of data	A	
X.	Field duplicates	SW	(3,4) (9,10)
XI.	Field blanks	ND	FB= 5,11 TB=6,12

Note: A = Acceptable ND = No compounds detected D = Duplicate
 N = Not provided/applicable R = Rinsate TB = Trip blank
 SW = See worksheet FB = Field blank EB = Equipment blank

Validated Samples: Air

1	OAM 1 (03/11/14)	11	PAM-21 (03/12/14)	21	31
2	OAM 2 (03/11/14)	12	PAM-31 (03/12/14)	22	32
3	PAM-1 (03/11/14)	13	PAM-1 (03/11/14)DUP	23	33
4	PAM-1D (03/11/14)	14	PAM-1D (03/11/14)DUP	24	34
5	PAM-21 (03/11/14)	15	PAM-1 (03/12/14)DUP	25	35
6	PAM-31 (03/11/14)	16	PAM-1D (03/12/14)DUP	26	36
7	OAM 1 (03/12/14)	17		27	37
8	OAM 2 (03/12/14)	18		28	38
9	PAM-1 (03/12/14)	19		29	39
10	PAM-1D (03/12/14)	20		30	40

Notes: _____

Method: Inorganics (EPA Method Recovery)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients > 0.995?	✓			
Were all initial and continuing calibration verification %Rs within the ^{85-115%} 90-110% QC limits?	✓			
Were titrant checks performed as required? (Level IV only)			✓	
Were balance checks performed as required? (Level IV only)			✓	
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. Matrix spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.			✓	
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL (≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were < 5X the CRDL.	✓			
V. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 31489A6

VALIDATION FINDINGS CHECKLIST

Page: 2 of 2
Reviewer: [Signature]
2nd Reviewer: _____

Validation Area	Yes	No	NA	Findings/Comments
VII. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were detection limits < RL?	✓			
VIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
IX. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target analytes were detected in the field duplicates.	✓			
X. Field blanks				
Field blanks were identified in this SDG.	✓			
Target analytes were detected in the field blanks.		✓		

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Method: Inorganics (see cover)

Analyte	Concentration (ng/m ³)		RPD (≤ 20)	Qualifiers (Parents Only)
	3	4		
Hexavalent Chromium	0.0697	0.0753	8	

Analyte	Concentration (ng/m ³)		RPD (≤ 20)	Qualifiers (Parents Only)
	9	10		
Hexavalent Chromium	0.0741	0.0771	4	



LDC #: 31489A6

Validation Findings Worksheet
Initial and Continuing Calibration Calculation Verification

Page: 1 of 1
 Reviewer: [Signature]
 2nd Reviewer: [Signature]

Method: Inorganics, Method See Cover

The correlation coefficient (r) for the calibration of Cd²⁺ was recalculated. Calibration date: 3/13/14

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$$\%R = \frac{\text{Found} \times 100}{\text{True}}$$

Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution
 True = concentration of each analyte in the ICV or CCV source

Type of analysis	Analyte	Standard	Conc. (mg/L)	Area	Recalculated	Reported	Acceptable (Y/N)
					r or r ²	r or r ²	
Initial calibration	Cd ²⁺	s1	0.1	0.0000181	0.99994	0.99994	Y
		s2	0.1	0.0000363			
		s3	0.2	0.0000814			
		s4	0.5	0.0002204			
		s5	1	0.0004546			
		s6	2	0.0008997			
Calibration verification	↓	ICV	0.5	0.5238	109	—	Y
Calibration verification	↓	CCV	↓	0.5495	110	—	
Calibration verification	↓	↓	↓	0.5423	108	—	

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 3489AG

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: QR
2nd Reviewer: [Signature]

METHOD: Inorganics, Method see cover

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$$\%R = \frac{\text{Found}}{\text{True}} \times 100$$
 Where, Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$$RPD = \frac{|S-D|}{(S+D)/2} \times 100$$
 Where, S = Original sample concentration
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated	Reported	Acceptable (Y/N)
					%R / RPD	%R / RPD	
LCS	Laboratory control sample	C ₆ H ₆	0.4866	0.463	105	105	Y
N	Matrix spike sample		(SSR-SR)				
13	Duplicate sample	C ₆ H ₆	0.0675	0.0697	3.21	3.21	Y

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 3148A6

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
 Reviewer: OR
 2nd reviewer: [Signature]

METHOD: Inorganics, Method see cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

- Y N N/A Have results been reported and calculated correctly?
- Y N N/A Are results within the calibrated range of the instruments?
- Y N N/A Are all detection limits below the CRQL?

Compound (analyte) results for As⁵⁺ reported with a positive detect were recalculated and verified using the following equation:

Concentration =
$$\frac{\text{Area} - \text{Intercept}}{\text{Slope}} \left(\frac{\text{Final Vol}}{\text{Air Vol}} \right)$$

Recalculation:
$$\frac{0.0000403 + 0.0000661}{0.0004546} \left(\frac{10 \text{ mL}}{20.88 \text{ m}^3} \right) = 0.0494 \text{ ng/m}^3$$

#	Sample ID	Analyte	Reported Concentration (ng/m ³)	Calculated Concentration (ng/m ³)	Acceptable (Y/N)		
	1	As ⁵⁺	0.0494	0.0494	Y		
	2	↓	0.0438	0.0438	↓		
	3		0.0697	0.0697			
	4		0.0753	0.0753			
	7		0.0419	0.0419			
	8		0.0659	0.0659			
	9		0.0741	0.0741			
	10		0.0771	0.0771		Y	

Note: _____



CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 03/17/14 11:10

SUBMITTED: 03/12/14 to 03/13/14

AQS SITE

CODE:
SITE CODE:

Honeywell Hex Chrome Study

Description: OAM 1

Lab ID: 4031210-01

Sampled: 03/11/14 11:22

Matrix: Air

Sample Volume: 20.88 m³

Received: 03/12/14 11:16

Comments:

Analysis Date: 03/13/14 15:00

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u> <u>ng/m³ Air</u>	<u>Flag</u>	<u>MDL</u> <u>ng/m³ Air</u>
Hexavalent Chromium	1854-02-99	0.0494		0.0036

023/17/14

Eastern Research Group

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REPORTED: 03/17/14 11:10

SUBMITTED: 03/12/14 to 03/13/14

AQS SITE

CODE:
SITE CODE:

Honeywell Hex Chrome Study

Description: OAM 2

Lab ID: 4031210-02

Sampled: 03/11/14 12:20

Matrix: Air

Sample Volume: 21.3 m³

Received: 03/12/14 11:16

Comments:

Analysis Date: 03/13/14 15:10

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u> <u>ng/m³ Air</u>	<u>Flag</u>	<u>MDL</u> <u>ng/m³ Air</u>
Hexavalent Chromium	1854-02-99	0.0938		0.0036

03/17/14

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REPORTED: 03/17/14 11:10

SUBMITTED: 03/12/14 to 03/13/14

AQS SITE

CODE:
SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-1

Lab ID: 4031210-03

Sampled: 03/11/14 10:22

Matrix: Air

Sample Volume: 21.33 m³

Received: 03/12/14 11:16

Comments: Col 1

Analysis Date: 03/13/14 15:20

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u> <u>ng/m³ Air</u>	<u>Flag</u>	<u>MDL</u> <u>ng/m³ Air</u>
Hexavalent Chromium	1854-02-99	0.0697		0.0036

03/17/14

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REPORTED: 03/17/14 11:10

SUBMITTED: 03/12/14 to 03/13/14

AQS SITE

CODE:
SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-1D

Lab ID: 4031210-04

Sampled: 03/11/14 10:48

Matrix: Air

Sample Volume: 21.49 m³

Received: 03/12/14 11:16

Comments: Col 2

Analysis Date: 03/13/14 15:40

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u> <u>ng/m³ Air</u>	<u>Flag</u>	<u>MDL</u> <u>ng/m³ Air</u>
Hexavalent Chromium	1854-02-99	0.0753		0.0036

023/17/14



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FILE #: 3926.00

REPORTED: 03/17/14 11:10

SUBMITTED: 03/12/14 to 03/13/14

AQS SITE

CODE:
SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-21

Lab ID: 4031210-05

Sampled: 03/11/14 12:00

Matrix: Air

Sample Volume: 24 m³

Received: 03/12/14 11:16

Comments:

Analysis Date: 03/13/14 16:00

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u> <u>ng/m³ Air</u>	<u>Flag</u>	<u>MDL</u> <u>ng/m³ Air</u>
Hexavalent Chromium	1854-02-99	ND	U	0.0032

03/17/14

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REPORTED: 03/17/14 11:10

SUBMITTED: 03/12/14 to 03/13/14

AQS SITE

CODE:
SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-31

Lab ID: 4031210-06

Sampled: 03/11/14 12:50

Matrix: Air

Sample Volume: 24 m³

Received: 03/12/14 11:16

Comments:

Analysis Date: 03/13/14 16:10

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u> <u>ng/m³ Air</u>	<u>Flag</u>	<u>MDL</u> <u>ng/m³ Air</u>
Hexavalent Chromium	1854-02-99	ND	U	0.0032

03/17/14



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FILE #: 3926.00

REPORTED: 03/17/14 11:10

SUBMITTED: 03/12/14 to 03/13/14

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: OAM 1	Lab ID: 4031301-01	Sampled: 03/12/14 11:26
Matrix: Air	Sample Volume: 21.29 m ³	Received: 03/13/14 10:51
Comments:		Analysis Date: 03/13/14 16:20

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u> <u>ng/m³ Air</u>	<u>Flag</u>	<u>MDL</u> <u>ng/m³ Air</u>
Hexavalent Chromium	1854-02-99	0.0419		0.0036

03/17/14

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FILE #: 3926.00

REPORTED: 03/17/14 11:10

SUBMITTED: 03/12/14 to 03/13/14

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: OAM 2

Lab ID: 4031301-02

Sampled: 03/12/14 12:05

Matrix: Air

Sample Volume: 21.33 m³

Received: 03/13/14 10:51

Comments:

Analysis Date: 03/13/14 16:29

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u> <u>ng/m³ Air</u>	<u>Flag</u>	<u>MDL</u> <u>ng/m³ Air</u>
Hexavalent Chromium	1854-02-99	0.0659		0.0036

0023/17/14

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FILE #: 3926.00

REPORTED: 03/17/14 11:10

SUBMITTED: 03/12/14 to 03/13/14

AQS SITE

CODE:
SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-1

Lab ID: 4031301-03

Sampled: 03/12/14 10:27

Matrix: Air

Sample Volume: 21.41 m³

Received: 03/13/14 10:51

Comments: Col 1

Analysis Date: 03/13/14 16:59

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u> <u>ng/m³ Air</u>	<u>Flag</u>	<u>MDL</u> <u>ng/m³ Air</u>
Hexavalent Chromium	1854-02-99	0.0741		0.0036

03/17/14



CERTIFICATE OF ANALYSIS

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ATTN: Mr. Jeff Boggs

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FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 03/17/14 11:10

SUBMITTED: 03/12/14 to 03/13/14

AQS SITE

CODE:
SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-1D

Lab ID: 4031301-04

Sampled: 03/12/14 10:46

Matrix: Air

Sample Volume: 21.38 m³

Received: 03/13/14 10:51

Comments: Col 2

Analysis Date: 03/13/14 17:19

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u> <u>ng/m³ Air</u>	<u>Flag</u>	<u>MDL</u> <u>ng/m³ Air</u>
Hexavalent Chromium	1854-02-99	0.0771		0.0036

003/17/14

Eastern Research Group

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FILE #: 3926.00

REPORTED: 03/17/14 11:10

SUBMITTED: 03/12/14 to 03/13/14

AQS SITE

CODE:
SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-21

Lab ID: 4031301-05

Sampled: 03/12/14 11:29

Matrix: Air

Sample Volume: 21.29 m³

Received: 03/13/14 10:51

Comments:

Analysis Date: 03/13/14 17:39

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u> <u>ng/m³ Air</u>	<u>Flag</u>	<u>MDL</u> <u>ng/m³ Air</u>
Hexavalent Chromium	1854-02-99	ND	U	0.0036

CSC 3/17/14

Eastern Research Group

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CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 03/17/14 11:10

SUBMITTED: 03/12/14 to 03/13/14

AQS SITE

CODE:
SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-31

Lab ID: 4031301-06

Sampled: 03/12/14 11:27

Matrix: Air

Sample Volume: 21.29 m³

Received: 03/13/14 10:51

Comments:

Analysis Date: 03/13/14 17:49

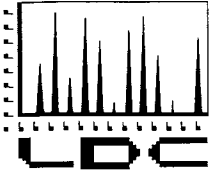
Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u> <u>ng/m³ Air</u>	<u>Flag</u>	<u>MDL</u> <u>ng/m³ Air</u>
Hexavalent Chromium	1854-02-99	ND	U	0.0036

CSC 3/17/14

Eastern Research Group

The results in this report apply only to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



LABORATORY DATA CONSULTANTS, INC.

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

ERM
5761 N. Church Street
Glen Rock, PA 17327
ATTN: Mr. Jeff Boggs

March 31, 2014

SUBJECT: Revised Harbor Point, MD, Hexavalent Chromium Monitoring, Data Validation

Dear Mr. Boggs,

Enclosed is the revised validation report for fraction listed below. Please replace the previously submitted report with the enclosed revised report.

LDC Project # 31501:

SDG

4031415/4031707

Fraction

Hexavalent Chromium

Please feel free to contact us if you have any questions.

Sincerely,

Christina Rink
Project Manager/Chemist

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: Harbor Point, MD, Hexavalent Chromium Monitoring
Collection Date: March 13 through March 14, 2014
LDC Report Date: March 31, 2014
Matrix: Air
Parameters: Hexavalent Chromium
Validation Level: EPA Level IV
Laboratory: Eastern Research Group
Sample Delivery Group (SDG): 4031415/4031707

Sample Identification

OAM 1 (03/13/14)
OAM 2 (03/13/14)
PAM-1 (03/13/14)
PAM-1D (03/13/14)
PAM-21 (03/13/14)
PAM-31 (03/13/14)
OAM 1 (03/14/14)
OAM 2 (03/14/14)
PAM-1 (03/14/14)
PAM-1D (03/14/14)
PAM-21 (03/14/14)
PAM-31 (03/14/14)
PAM-1 (03/13/14)DUP
PAM-1D (03/13/14)DUP
PAM-1 (03/14/14)DUP
PAM-1D (03/14/14)DUP

Introduction

This data review covers 16 air samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per ASTM D7614 for Hexavalent Chromium.

This review follows the Air Monitoring Program Quality Assurance Project Plan, Area 1, Phase 1 Development, Version 1, Baltimore Works Site, Baltimore, Maryland (March 2014) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review (January 2010).

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- NJ Presumptive evidence of presence of the compound at an estimated quantity.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

II. Initial Calibration

All criteria for the initial calibration were met.

III. Calibration verification

Calibration verification frequency and analysis criteria were met.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No hexavalent chromium was found in the method blanks.

Samples PAM-31 (03/13/14) and PAM-31 (03/14/14) were identified as trip blanks. No hexavalent chromium was found.

Samples PAM-21 (03/13/14) and PAM-21 (03/14/14) were identified as field blanks. No hexavalent chromium was found.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) analysis was not required by the method.

VI. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Relative percent differences (RPD) were within QC limits

VII. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Sample Result Verification

All sample result verifications were acceptable.

IX. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

X. Field Duplicates

Samples PAM-1 (03/13/14) and PAM-1D (03/13/14) and samples PAM-1 (03/14/14) and PAM-1D (03/14/14) were identified as field duplicates. No hexavalent chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (ng/m ³)		RPD (Limits)	Flags	A or P
	PAM-1 (03/13/14)	PAM-1D (03/13/14)			
Hexavalent chromium	0.0239	0.0197	19 (≤20)	-	-

Analyte	Concentration (ng/m ³)		RPD (Limits)	Flags	A or P
	PAM-1 (03/14/14)	PAM-1D (03/14/14)			
Hexavalent chromium	0.0218	0.0258	17 (≤20)	-	-

**Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Data Qualification Summary - SDG 4031415/4031707**

No Sample Data Qualified Due to QA/QC Exceedences in this SDG

**Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG
4031415/4031707**

No Sample Data Qualified Due to Laboratory Blank Contamination in this
SDG

**Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Field Blank Data Qualification Summary - SDG
4031415/4031707**

No Sample Data Qualified Due to Field Blank Contamination in this SDG

LDC #: 31501A6
 SDG #: 4031415/4031707
 Laboratory: Eastern Research Group

VALIDATION COMPLETENESS WORKSHEET

Level IV

Date: 3/19/14
 Page: 1 of 1
 Reviewer: OL
 2nd Reviewer: W

METHOD: Hexavalent Chromium (ASTM D7614)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: <u>3/13-14/14</u>
II.	Initial calibration	A	
III.	Calibration verification	A	
IV.	Blanks	A	
V.	Matrix Spike/Matrix Spike Duplicates	N	Not required
VI.	Duplicates	A	
VII.	Laboratory control samples	A	<u>LCS/D</u>
VIII.	Sample result verification	A	<u>Recal detects, ICAL, CCAL, & batch QC.</u>
IX.	Overall assessment of data	A	
X.	Field duplicates	SW	<u>(3,4) (9,10)</u>
XI.	Field blanks	ND	<u>FB=5,11 TB=6,17</u>

Note: A = Acceptable ND = No compounds detected D = Duplicate
 N = Not provided/applicable R = Rinsate TB = Trip blank
 SW = See worksheet FB = Field blank EB = Equipment blank

Validated Samples: ASC

1	OAM 1 (03/13/14)	11	PAM-21 (03/14/14)	21		31	
2	OAM 2 (03/13/14)	12	PAM-31 (03/14/14)	22		32	
3	PAM-1 (03/13/14)	13	PAM-1 (03/13/14)DUP	23		33	
4	PAM-1D (03/13/14)	14	PAM-1D (03/13/14)DUP	24		34	
5	PAM-21 (03/13/14)	15	PAM-1 (03/14/14)DUP	25		35	
6	PAM-31 (03/13/14)	16	PAM-1D (03/14/14)DUP	26		36	
7	OAM 1 (03/14/14)	17		27		37	
8	OAM 2 (03/14/14)	18		28		38	
9	PAM-1 (03/14/14)	19		29		39	
10	PAM-1D (03/14/14)	20		30		40	

Notes: _____

Method: Inorganics (EPA Method Recover)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients ≥ 0.995 ?	✓			
Were all initial and continuing calibration verification %Rs within the ^{85-115%} 90-110% QC limits?	✓			
Were titrant checks performed as required? (Level IV only)			✓	
Were balance checks performed as required? (Level IV only)			✓	
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. Matrix spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.			✓	
Were the MS/MSD or duplicate relative percent differences (RPD) $\leq 20\%$ for waters and $\leq 35\%$ for soil samples? A control limit of \leq CRDL ($\leq 2X$ CRDL for soil) was used for samples that were $\leq 5X$ the CRDL, including when only one of the duplicate sample values were $\leq 5X$ the CRDL.	✓			
V. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 31501AG

VALIDATION FINDINGS CHECKLIST

Page: 2 of 3
 Reviewer: [Signature]
 2nd Reviewer: _____

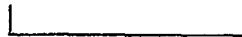
Validation Area	Yes	No	NA	Findings/Comments
VII. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were detection limits < RL?	✓			
VIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
IX. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target analytes were detected in the field duplicates.	✓			
X. Field blanks				
Field blanks were identified in this SDG.	✓			
Target analytes were detected in the field blanks.		✓		

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Method: Inorganics (see cover)

Analyte	Concentration (ng/m ³)		RPD (≤ 20)	Qualifiers (Parents Only)
	3	4		
Hexavalent Chromium	0.0239	0.0197	19	

Analyte	Concentration (ng/m ³)		RPD (≤ 20)	Qualifiers (Parents Only)
	9	10		
Hexavalent Chromium	0.0218	0.0258	17	



LDC #: 31501AG

Validation Findings Worksheet
Initial and Continuing Calibration Calculation Verification

Page: 1 of 1
 Reviewer: [Signature]
 2nd Reviewer: [Signature]

Method: Inorganics, Method See Cover

The correlation coefficient (r) for the calibration of Cr was recalculated. Calibration date: 3/18/14

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$$\%R = \frac{\text{Found} \times 100}{\text{True}}$$

Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution
 True = concentration of each analyte in the ICV or CCV source

Type of analysis	Analyte	Standard	Conc. (mg/L)	Area	Recalculated	Reported	Acceptable (Y/N)
					r or r ²	r or r ²	
Initial calibration	Cr	s1	0.1	0.0000175	0.99992	0.99992	Y
		s2	0.1	0.0000411			
		s3	0.2	0.0000755			
		s4	0.5	0.0002007			
		s5	1	0.0004224			
		s6	2	0.0008457			
Calibration verification		ICV	0.5	0.5200	104	-	
Calibration verification		CCV		0.549	109	-	
Calibration verification				0.5588	112	-	

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 31501A6

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: OR
2nd Reviewer: [Signature]

METHOD: Inorganics, Method see cover

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$$\%R = \frac{\text{Found}}{\text{True}} \times 100$$
 Where, Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$$RPD = \frac{|S-D|}{(S+D)/2} \times 100$$
 Where, S = Original sample concentration
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated	Reported	Acceptable (Y/N)
					%R / RPD	%R / RPD	
LCS	Laboratory control sample	Cr^{6+}	0.482	0.463	104	104	Y
N	Matrix spike sample		(SSR-SR)				
B	Duplicate sample	Cr^{6+}	0.0277	0.0239	15	15	Y

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

3120416

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

METHOD: Inorganics, Method see cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

- Y N N/A Have results been reported and calculated correctly?
- Y N N/A Are results within the calibrated range of the instruments?
- Y N N/A Are all detection limits below the CRQL?

Compound (analyte) results for Cr⁶⁺ reported with a positive detect were recalculated and verified using the following equation:

Concentration = $\frac{\text{Area} - \text{Intercept}}{\text{Slope}} \left(\frac{\text{Vol}}{\text{Air Vol}} \right)$ Recalculation: $3 = \frac{0.0000152 + 0.00000602 \left(\frac{10 \text{ mL}}{20.94 \text{ m}^3} \right)}{0.0004257} = 0.02380 \text{ ng/m}^3$

#	Sample ID	Analyte	Reported Concentration (ng/m ³)	Calculated Concentration (ng/m ³)	Acceptable (Y/N)	
	1	Cr ⁶⁺	0.0162	0.0161	Y	
	2		0.0260	0.0260	Y	
	3		0.0239	0.0238		
	4		0.0197	0.0197		
	7		0.0228	0.0228		
	8		0.0251	0.0251		
	9		0.0218	0.0218		
	10		0.0258	0.0258		

Note: _____



CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 03/19/14 12:56

SUBMITTED: 03/14/14 to 03/17/14

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: OAM 1

Lab ID: 4031415-01

Sampled: 03/13/14 11:20

Matrix: Air

Sample Volume: 21.3 m³

Received: 03/14/14 11:06

Comments:

Analysis Date: 03/18/14 14:18

Hexavalent Chromium

Analyte	CAS Number	Results		MDL
		ng/m ³ Air	Flag	
Hexavalent Chromium	1854-02-99	0.0162		0.0036

Eastern Research Group

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CE 3/19/14



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REPORTED: 03/19/14 12:56

SUBMITTED: 03/14/14 to 03/17/14

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: OAM 2

Lab ID: 4031415-02

Sampled: 03/13/14 12:16

Matrix: Air

Sample Volume: 21.58 m³

Received: 03/14/14 11:06

Comments:

Analysis Date: 03/18/14 14:27

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u> <u>ng/m³ Air</u>	<u>Flag</u>	<u>MDL</u> <u>ng/m³ Air</u>
Hexavalent Chromium	1854-02-99	0.0260		0.0036

03/19/14



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SUBMITTED: 03/14/14 to 03/17/14

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-1

Lab ID: 4031415-03

Sampled: 03/13/14 09:55

Matrix: Air

Sample Volume: 20.94 m³

Received: 03/14/14 11:06

Comments: Col 1

Analysis Date: 03/18/14 12:58

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u> <u>ng/m³ Air</u>	<u>Flag</u>	<u>MDL</u> <u>ng/m³ Air</u>
Hexavalent Chromium	1854-02-99	0.0239		0.0036

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03/19/14



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REPORTED: 03/19/14 12:56

SUBMITTED: 03/14/14 to 03/17/14

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1D	Lab ID: 4031415-04	Sampled: 03/13/14 10:28
Matrix: Air	Sample Volume: 21.02 m ³	Received: 03/14/14 11:06
Comments: Col 2		Analysis Date: 03/18/14 13:18

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u> <u>ng/m³ Air</u>	<u>Flag</u>	<u>MDL</u> <u>ng/m³ Air</u>
Hexavalent Chromium	1854-02-99	0.0197		0.0036

023/14/14



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REPORTED: 03/19/14 12:56

SUBMITTED: 03/14/14 to 03/17/14

AQS SITE

CODE:

SITE CODE: Honeywell Hex Chrome Study

Description: PAM-21

Lab ID: 4031415-05

Sampled: 03/13/14 11:19

Matrix: Air

Sample Volume: 21.3 m³

Received: 03/14/14 11:06

Comments:

Analysis Date: 03/18/14 14:57

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u>		<u>MDL</u>
		<u>ng/m³ Air</u>	<u>Flag</u>	
Hexavalent Chromium	1854-02-99	ND	U	0.0036

023/19/14



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REPORTED: 03/19/14 12:56

SUBMITTED: 03/14/14 to 03/17/14

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-31

Lab ID: 4031415-06

Sampled: 03/13/14 11:21

Matrix: Air

Sample Volume: 21.3 m³

Received: 03/14/14 11:06

Comments:

Analysis Date: 03/18/14 15:07

Hexavalent Chromium

Results

MDL

Analyte

CAS Number

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

ND

U

0.0036

03/19/14



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FILE #: 3926.00

REPORTED: 03/19/14 12:56

SUBMITTED: 03/14/14 to 03/17/14

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: OAM 1

Lab ID: 4031707-01

Sampled: 03/14/14 11:03

Matrix: Air

Sample Volume: 20.98 m³

Received: 03/17/14 10:28

Comments:

Analysis Date: 03/18/14 15:17

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u>		<u>MDL</u>
		<u>ng/m³ Air</u>	<u>Flag</u>	
Hexavalent Chromium	1854-02-99	0.0228		0.0036

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03/19/14



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FILE #: 3926.00

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REPORTED: 03/19/14 12:56

Malvern, PA 19355

SUBMITTED: 03/14/14 to 03/17/14

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

FAX: (410) 266-8912

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: OAM 2

Lab ID: 4031707-02

Sampled: 03/14/14 11:55

Matrix: Air

Sample Volume: 21.08 m³

Received: 03/17/14 10:28

Comments:

Analysis Date: 03/18/14 15:57

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u>		<u>MDL</u>
		<u>ng/m³ Air</u>	<u>Flag</u>	
Hexavalent Chromium	1854-02-99	0.0251		0.0036

Handwritten signature/initials: CB/14/14



CERTIFICATE OF ANALYSIS

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Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 03/19/14 12:56

SUBMITTED: 03/14/14 to 03/17/14

AQS SITE

CODE:
SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-1

Lab ID: 4031707-03

Sampled: 03/14/14 09:57

Matrix: Air

Sample Volume: 21.33 m³

Received: 03/17/14 10:28

Comments: Col 1

Analysis Date: 03/18/14 13:38

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u> <u>ng/m³ Air</u>	<u>Flag</u>	<u>MDL</u> <u>ng/m³ Air</u>
Hexavalent Chromium	1854-02-99	0.0218		0.0036

CE 3/19/14



CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 03/19/14 12:56

SUBMITTED: 03/14/14 to 03/17/14

AQS SITE

CODE:
SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-1D

Lab ID: 4031707-04

Sampled: 03/14/14 10:16

Matrix: Air

Sample Volume: 21.16 m³

Received: 03/17/14 10:28

Comments: Col 2

Analysis Date: 03/18/14 13:57

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u> <u>ng/m³ Air</u>	<u>Flag</u>	<u>MDL</u> <u>ng/m³ Air</u>
Hexavalent Chromium	1854-02-99	0.0258		0.0035

Eastern Research Group

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02/19/14



CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc

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Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 03/19/14 12:56

SUBMITTED: 03/14/14 to 03/17/14

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-21	Lab ID: 4031707-05	Sampled: 03/14/14 10:59
Matrix: Air	Sample Volume: 20.98 m ³	Received: 03/17/14 10:28
Comments:		Analysis Date: 03/18/14 15:37

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u> ng/m ³ Air	<u>Flag</u>	<u>MDL</u> ng/m ³ Air
Hexavalent Chromium	1854-02-99	ND	U	0.0036

03/19/14



CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 03/19/14 12:56

Malvern, PA 19355

SUBMITTED: 03/14/14 to 03/17/14

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

FAX: (410) 266-8912

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-31

Lab ID: 4031707-06

Sampled: 03/14/14 11:04

Matrix: Air

Sample Volume: 20.98 m³

Received: 03/17/14 10:28

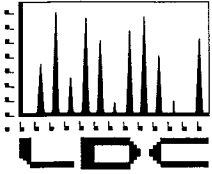
Comments:

Analysis Date: 03/18/14 15:47

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u>		<u>MDL</u>
		<u>ng/m³ Air</u>	<u>Flag</u>	
Hexavalent Chromium	1854-02-99	ND	U	0.0036

023/19/14



LABORATORY DATA CONSULTANTS, INC.

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

ERM
5761 N. Church Street
Glen Rock, PA 17327
ATTN: Mr. Jeff Boggs

March 31, 2014

SUBJECT: Revised Harbor Point, MD, Hexavalent Chromium Monitoring, Data Validation

Dear Mr. Boggs,

Enclosed is the revised validation report for fraction listed below. Please replace the previously submitted report with the enclosed revised report.

LDC Project # 31535:

SDG

4031920/4032021

Fraction

Hexavalent Chromium

Please feel free to contact us if you have any questions.

Sincerely,

Christina Rink
Project Manager/Chemist

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Harbor Point, MD, Hexavalent Chromium Monitoring
Collection Date: March 18 through March 19, 2014
LDC Report Date: March 31, 2014
Matrix: Air
Parameters: Hexavalent Chromium
Validation Level: EPA Level IV
Laboratory: Eastern Research Group
Sample Delivery Group (SDG): 4031920/4032021

Sample Identification

OAM 1 (03/18/14)
OAM 2 (03/18/14)
PAM-1 (03/18/14)
PAM-1D (03/18/14)
PAM-21 (03/18/14)
PAM-31 (03/18/14)
OAM 1 (03/19/14)
OAM 2 (03/19/14)
PAM-1 (03/19/14)
PAM-1D (03/19/14)
PAM-21 (03/19/14)
PAM-31 (03/19/14)
PAM-1 (03/18/14)DUP
PAM-1D (03/18/14)DUP
PAM-1 (03/19/14)DUP
PAM-1D (03/19/14)DUP

Introduction

This data review covers 16 air samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per ASTM D7614 for Hexavalent Chromium.

This review follows the Air Monitoring Program Quality Assurance Project Plan, Area 1, Phase 1 Development, Version 1, Baltimore Works Site, Baltimore, Maryland (March 2014) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review (January 2010).

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- NJ Presumptive evidence of presence of the compound at an estimated quantity.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

II. Initial Calibration

All criteria for the initial calibration were met.

III. Calibration verification

Calibration verification frequency and analysis criteria were met.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No hexavalent chromium was found in the method blanks.

Samples PAM-21 (03/18/14) and PAM-21 (03/19/14) were identified as field blanks. No hexavalent chromium was found.

Samples PAM-31 (03/18/14) and PAM-31 (03/19/14) were identified as trip blanks. No hexavalent chromium was found.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) analysis was not required by the method.

VI. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Relative percent differences (RPD) were within QC limits

VII. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Sample Result Verification

All sample result verifications were acceptable.

IX. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

X. Field Duplicates

Samples PAM-1 (03/18/14) and PAM-1D (03/18/14) and samples PAM-1 (03/19/14) and PAM-1D (03/19/14) were identified as field duplicates. No hexavalent chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (ng/m ³)		RPD (Limits)	Flags	A or P
	PAM-1 (03/18/14)	PAM-1D (03/18/14)			
Hexavalent chromium	0.0393	0.0374	5 (≤20)	-	-

Analyte	Concentration (ng/m ³)		RPD (Limits)	Flags	A or P
	PAM-1 (03/19/14)	PAM-1D (03/19/14)			
Hexavalent chromium	0.0224	0.0247	10 (≤20)	-	-

**Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Data Qualification Summary - SDG 4031920/4032021**

No Sample Data Qualified Due to QA/QC Exceedences in this SDG

**Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG
4031920/4032021**

No Sample Data Qualified Due to Laboratory Blank Contamination in this
SDG

**Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Field Blank Data Qualification Summary - SDG
4031920/4032021**

No Sample Data Qualified Due to Field Blank Contamination in this SDG

METHOD: Hexavalent Chromium (ASTM D7614)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: <u>3/18-19/14</u>
II.	Initial calibration	A	
III.	Calibration verification	A	
IV.	Blanks	A	
V.	Matrix Spike/Matrix Spike Duplicates	N	<u>Not required</u>
VI.	Duplicates	A	<u>DUP</u>
VII.	Laboratory control samples	A	<u>LCS/D</u>
VIII.	Sample result verification	A	<u>ICAL, CCAL, Depts, + batch QC recalculated.</u>
IX.	Overall assessment of data	A	
X.	Field duplicates	SW	<u>(3,4) (9,10)</u>
XI.	Field blanks	ND	<u>FB=5,11 TB=6,12</u>

Note: A = Acceptable ND = No compounds detected D = Duplicate
 N = Not provided/applicable R = Rinsate TB = Trip blank
 SW = See worksheet FB = Field blank EB = Equipment blank

Validated Samples: AFC

1	OAM 1 (03/18/14)	11	PAM-21 (03/19/14)	21		31	
2	OAM 2 (03/18/14)	12	PAM-31 (03/19/14)	22		32	
3	PAM-1 (03/18/14)	13	PAM-1 (03/18/14)DUP	23		33	
4	PAM-1D (03/18/14)	14	PAM-1D (03/18/14)DUP	24		34	
5	PAM-21 (03/18/14)	15	PAM-1 (03/19/14)DUP	25		35	
6	³ PAM-21 (03/18/14)	16	PAM-1D (03/19/14)DUP	26		36	
7	OAM 1 (03/19/14)	17		27		37	
8	OAM 2 (03/19/14)	18		28		38	
9	PAM-1 (03/19/14)	19		29		39	
10	PAM-1D (03/19/14)	20		30		40	

Notes: _____

Method: Inorganics (EPA Method 300.0)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients > 0.995?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% ^{85-115%} QC limits?	✓			
Were titrant checks performed as required? (Level IV only)			✓	
Were balance checks performed as required? (Level IV only)			✓	
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. Matrix spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.			✓	
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL (≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were ≤ 5X the CRDL.	✓			
V. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 31535A

VALIDATION FINDINGS CHECKLIST

Page: 2 of 3
 Reviewer: [Signature]
 2nd Reviewer: _____

Validation Area	Yes	No	NA	Findings/Comments
VII. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were detection limits < RL?	✓			
VIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
IX. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target analytes were detected in the field duplicates.	✓			
X. Field blanks				
Field blanks were identified in this SDG.	✓			
Target analytes were detected in the field blanks.		✓		

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Method: Inorganics (see cover)

Analyte	Concentration (ng/m ³)		RPD (≤ 20)	Qualifiers (Parents Only)
	3	4		
Hexavalent Chromium	0.0393	0.0374	5	

Analyte	Concentration (ng/m ³)		RPD (≤ 20)	Qualifiers (Parents Only)
	9	10		
Hexavalent Chromium	0.0224	0.0247	10	



LDC #: 3153SAL

**Validation Findings Worksheet
Initial and Continuing Calibration Calculation Verification**

Page: 1 of 1
 Reviewer: a
 2nd Reviewer: A

Method: Inorganics, Method See Cover

The correlation coefficient (r) for the calibration of Cr⁶⁺ was recalculated. Calibration date: 3/21/14

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$$\%R = \frac{\text{Found} \times 100}{\text{True}}$$

Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution
 True = concentration of each analyte in the ICV or CCV source

Type of analysis	Analyte	Standard	Conc. (mg/L)	Area	Recalculated	Reported	Acceptable (Y/N)
					r or r ²	r or r ²	
Initial calibration	Cr ⁶⁺	s1	0.1	0.0000217	0.99998	0.99998	Y
		s2	0.1	0.0000442			
		s3	0.2	0.0000934			
		s4	0.5	0.0002315			
		s5	1	0.0004766			
		s6	2	0.0009579			
Calibration verification	↓	ICV	103 105	0.5144	103	-	↓
Calibration verification	↓	CCV	105 105	0.5238	105	-	↓
Calibration verification							

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 31S3SA6

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: OR
2nd Reviewer: [Signature]

METHOD: Inorganics, Method see cover

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$$\%R = \frac{\text{Found}}{\text{True}} \times 100$$
 Where, Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$$RPD = \frac{|S-D|}{(S+D)/2} \times 100$$
 Where, S = Original sample concentration
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated	Reported	Acceptable (Y/N)
					%R / RPD	%R / RPD	
LCS	Laboratory control sample	C ⁶⁷	0.478	0.463	103	103	Y
N	Matrix spike sample		(SSR-SR)				
13	Duplicate sample	C ⁶⁷	0.476	0.463	0.3	0.3	Y

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 31535A6

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
 Reviewer: CR
 2nd reviewer: C

METHOD: Inorganics, Method see cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

- Y N N/A Have results been reported and calculated correctly?
- Y N N/A Are results within the calibrated range of the instruments?
- Y N N/A Are all detection limits below the CRQL?

Compound (analyte) results for Cr⁶⁺ reported with a positive detect were recalculated and verified using the following equation:

Concentration = $\frac{\text{Area-Intercept} \left(\frac{\text{Vol}}{\text{A:Vol}} \right)}{\text{Slope}}$ Recalculation: $\frac{0.0000066 + 0.0000416}{0.0004806} \times \frac{10 \text{ mL}}{20.77 \text{ m}^3} = 0.010779 \text{ mg/L}$

#	Sample ID	Analyte	Reported Concentration (mg/m ³)	Calculated Concentration (mg/m ³)	Acceptable (Y/N)	
	1	Cr ⁶⁺	0.0135	0.0134	Y	
	2	↓	0.0148	0.0147	↓	
	3		0.0393	0.0393		
	4		0.0374	0.0373		
	7		0.0108	0.0108		
	9		0.0224	0.0223		
	10		0.0247	0.0247		

Note: _____



CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355

FILE #: 3926.00
REPORTED: 03/24/14 14:54
SUBMITTED: 03/19/14 to 03/20/14

ATTN: Mr. Jeff Boggs

AQS SITE
CODE:
SITE CODE: Honeywell Hex Chrome Study

PHONE: (443) 803-8495 FAX: (410) 266-8912

Description: OAM 1 Lab ID: 4031920-01 Sampled: 03/18/14 11:14
Matrix: Air Sample Volume: 21.18 m³ Received: 03/19/14 12:30
Comments: Analysis Date: 03/21/14 13:57

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u> <u>ng/m³ Air</u>	<u>Flag</u>	<u>MDL</u> <u>ng/m³ Air</u>
Hexavalent Chromium	1854-02-99	0.0135		0.0036

Eastern Research Group

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CR 3/24/14



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75 Valley Stream Parkway, Suite 400
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FILE #: 3926.00
REPORTED: 03/24/14 14:54
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ATTN: Mr. Jeff Boggs

AQS SITE
CODE:
SITE CODE: Honeywell Hex Chrome Study

PHONE: (443) 803-8495 FAX: (410) 266-8912

Description: OAM 2	Lab ID: 4031920-02	Sampled: 03/18/14 11:48
Matrix: Air	Sample Volume: 21 m ³	Received: 03/19/14 12:30
Comments:		Analysis Date: 03/21/14 14:07

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u> ng/m ³ Air	<u>Flag</u>	<u>MDL</u> ng/m ³ Air
Hexavalent Chromium	1854-02-99	0.0148		0.0036

CR-3/29/14



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ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

FAX: (410) 266-8912

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-1

Lab ID: 4031920-03

Sampled: 03/18/14 10:29

Matrix: Air

Sample Volume: 21.85 m³

Received: 03/19/14 12:30

Comments: Col 1

Analysis Date: 03/21/14 14:17

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u> ng/m ³ Air	<u>Flag</u>	<u>MDL</u> ng/m ³ Air
Hexavalent Chromium	1854-02-99	0.0393		0.0036

03/24/14



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FILE #: 3926.00
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ATTN: Mr. Jeff Boggs

AQS SITE
CODE:
SITE CODE: Honeywell Hex Chrome Study

PHONE: (443) 803-8495 FAX: (410) 266-8912

Description: PAM-1D	Lab ID: 4031920-04	Sampled: 03/18/14 10:46
Matrix: Air	Sample Volume: 21.65 m ³	Received: 03/19/14 12:30
Comments: Col 2		Analysis Date: 03/21/14 14:36

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u> <u>ng/m³ Air</u>	<u>Flag</u>	<u>MDL</u> <u>ng/m³ Air</u>
Hexavalent Chromium	1854-02-99	0.0374		0.0036

023/24/14



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REPORTED: 03/24/14 14:54

SUBMITTED: 03/19/14 to 03/20/14

AQS SITE

CODE:

SITE CODE: Honeywell Hex Chrome Study

Description: PAM-21

Lab ID: 4031920-05

Sampled: 03/18/14 11:15

Matrix: Air

Sample Volume: 21.18 m³

Received: 03/19/14 12:30

Comments:

Analysis Date: 03/21/14 14:56

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u> <u>ng/m³ Air</u>	<u>Flag</u>	<u>MDL</u> <u>ng/m³ Air</u>
Hexavalent Chromium	1854-02-99	ND	U	0.0036

CE3/24/14



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FILE #: 3926.00

REPORTED: 03/24/14 14:54

SUBMITTED: 03/19/14 to 03/20/14

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-31

Lab ID: 4031920-06

Sampled: 03/18/14 11:13

Matrix: Air

Sample Volume: 21.18 m³

Received: 03/19/14 12:30

Comments:

Analysis Date: 03/21/14 15:06

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u> <u>ng/m³ Air</u>	<u>Flag</u>	<u>MDL</u> <u>ng/m³ Air</u>
Hexavalent Chromium	1854-02-99	ND	U	0.0036

03/24/14



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Malvern, PA 19355

SUBMITTED: 03/19/14 to 03/20/14

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

FAX: (410) 266-8912

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: OAM 1

Lab ID: 4032021-01

Sampled: 03/19/14 10:27

Matrix: Air

Sample Volume: 20.77 m³

Received: 03/20/14 11:28

Comments:

Analysis Date: 03/21/14 16:55

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u> <u>ng/m³ Air</u>	<u>Flag</u>	<u>MDL</u> <u>ng/m³ Air</u>
Hexavalent Chromium	1854-02-99	0.0108		0.0036

CE 3/24/14



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REPORTED: 03/24/14 14:54

SUBMITTED: 03/19/14 to 03/20/14

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: OAM 2

Lab ID: 4032021-02

Sampled: 03/19/14 11:10

Matrix: Air

Sample Volume: 20.8 m³

Received: 03/20/14 11:28

Comments:

Analysis Date: 03/21/14 15:26

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u> <u>ng/m³ Air</u>	<u>Flag</u>	<u>MDL</u> <u>ng/m³ Air</u>
Hexavalent Chromium	1854-02-99	ND	U	0.0036

Eastern Research Group

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FILE #: 3926.00

REPORTED: 03/24/14 14:54

SUBMITTED: 03/19/14 to 03/20/14

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1	Lab ID: 4032021-03	Sampled: 03/19/14 09:45
Matrix: Air	Sample Volume: 20.76 m ³	Received: 03/20/14 11:28
Comments: Col 1		Analysis Date: 03/21/14 15:56

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u> ng/m ³ Air	<u>Flag</u>	<u>MDL</u> ng/m ³ Air
Hexavalent Chromium	1854-02-99	0.0224		0.0036

CR3/24/14



CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355

FILE #: 3926.00
REPORTED: 03/24/14 14:54
SUBMITTED: 03/19/14 to 03/20/14

ATTN: Mr. Jeff Boggs

AQS SITE
CODE:
SITE CODE: Honeywell Hex Chrome Study

PHONE: (443) 803-8495 FAX: (410) 266-8912

Description: PAM-1D	Lab ID: 4032021-04	Sampled: 03/19/14 10:00
Matrix: Air	Sample Volume: 20.75 m ³	Received: 03/20/14 11:28
Comments: Col 2		Analysis Date: 03/21/14 16:16

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u> <u>ng/m³ Air</u>	<u>Flag</u>	<u>MDL</u> <u>ng/m³ Air</u>
Hexavalent Chromium	1854-02-99	0.0247		0.0036

C. 23/29/14



CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355

FILE #: 3926.00
REPORTED: 03/24/14 14:54
SUBMITTED: 03/19/14 to 03/20/14

ATTN: Mr. Jeff Boggs

AQS SITE
CODE:
SITE CODE: Honeywell Hex Chrome Study

PHONE: (443) 803-8495 FAX: (410) 266-8912

Description: PAM-21	Lab ID: 4032021-05	Sampled: 03/19/14 10:26
Matrix: Air	Sample Volume: 20.77 m ³	Received: 03/20/14 11:28
Comments:		Analysis Date: 03/21/14 16:35

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u> <u>ng/m³ Air</u>	<u>Flag</u>	<u>MDL</u> <u>ng/m³ Air</u>
Hexavalent Chromium	1854-02-99	ND	U	0.0036

Eastern Research Group

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CJ 3/29/14



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75 Valley Stream Parkway, Suite 400

REPORTED: 03/24/14 14:54

Malvern, PA 19355

SUBMITTED: 03/19/14 to 03/20/14

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

FAX: (410) 266-8912

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-31

Lab ID: 4032021-06

Sampled: 03/19/14 11:28

Matrix: Air

Sample Volume: 20.77 m³

Received: 03/20/14 11:28

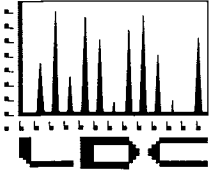
Comments:

Analysis Date: 03/21/14 16:45

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u> <u>ng/m³ Air</u>	<u>Flag</u>	<u>MDL</u> <u>ng/m³ Air</u>
Hexavalent Chromium	1854-02-99	ND	U	0.0036

Handwritten signature: C. E. 3/24/14



LABORATORY DATA CONSULTANTS, INC.

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

ERM
5761 N. Church Street
Glen Rock, PA 17327
ATTN: Mr. Jeff Boggs

March 31, 2014

SUBJECT: Revised Harbor Point, MD, Hexavalent Chromium Monitoring, Data Validation

Dear Mr. Boggs,

Enclosed is the revised validation report for fraction listed below. Please replace the previously submitted report with the enclosed revised report.

LDC Project # 31539:

<u>SDG</u>	Fraction
4032112/4032411	Hexavalent Chromium

Please feel free to contact us if you have any questions.

Sincerely,

Christina Rink
Project Manager/Chemist

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: Harbor Point, MD, Hexavalent Chromium Monitoring
Collection Date: March 20 through March 21, 2014
LDC Report Date: March 31, 2014
Matrix: Air
Parameters: Hexavalent Chromium
Validation Level: EPA Level IV
Laboratory: Eastern Research Group
Sample Delivery Group (SDG): 4032112/4032411

Sample Identification

OAM 1 (03/20/14)
OAM 2 (03/20/14)
PAM-1 (03/20/14)
PAM-1D (03/20/14)
PAM-21 (03/20/14)
PAM-31 (03/20/14)
OAM 1 (03/21/14)
OAM 2 (03/21/14)
PAM-1 (03/21/14)
PAM-1D (03/21/14)
PAM-21 (03/21/14)
PAM-31 (03/21/14)
PAM-1 (03/20/14)DUP
PAM-1D (03/20/14)DUP
PAM-1 (03/21/14)DUP
PAM-1D (03/21/14)DUP

Introduction

This data review covers 16 air samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per ASTM D7614 for Hexavalent Chromium.

This review follows the Air Monitoring Program Quality Assurance Project Plan, Area 1, Phase 1 Development, Version 1, Baltimore Works Site, Baltimore, Maryland (March 2014) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review (January 2010).

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- NJ Presumptive evidence of presence of the compound at an estimated quantity.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

II. Initial Calibration

All criteria for the initial calibration were met.

III. Calibration verification

Calibration verification frequency and analysis criteria were met.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No hexavalent chromium was found in the method blanks.

Samples PAM-21 (03/20/14) and PAM-21 (03/21/14) were identified as field blanks. No hexavalent chromium was found.

Samples PAM-31 (03/20/14) and PAM-31 (03/21/14) were identified as trip blanks. No hexavalent chromium was found.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) analysis was not required by the method.

VI. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Relative percent differences (RPD) were within QC limits.

VII. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Sample Result Verification

All sample result verifications were acceptable.

IX. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

X. Field Duplicates

Samples PAM-1 (03/20/14) and PAM-1D (03/20/14) and samples PAM-1 (03/21/14) and PAM-1D (03/21/14) were identified as field duplicates. No hexavalent chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (ng/m ³)		RPD (Limits)	Flags	A or P
	PAM-1 (03/20/14)	PAM-1D (03/20/14)			
Hexavalent chromium	0.0355	0.0298	17 (≤20)	-	-

Analyte	Concentration (ng/m ³)		RPD (Limits)	Flags	A or P
	PAM-1 (03/21/14)	PAM-1D (03/21/14)			
Hexavalent chromium	0.0136	0.0113	18 (≤20)	-	-

**Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Data Qualification Summary - SDG 4032112/4032411**

No Sample Data Qualified Due to QA/QC Exceedences in this SDG

**Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG
4032112/4032411**

No Sample Data Qualified Due to Laboratory Blank Contamination in this
SDG

**Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Field Blank Data Qualification Summary - SDG
4032112/4032411**

No Sample Data Qualified Due to Field Blank Contamination in this SDG

LDC #: 31539A6
 SDG #: 4032112/4032411
 Laboratory: Eastern Research Group

VALIDATION COMPLETENESS WORKSHEET

Level: IV

Date: 3/25/14
 Page: 1 of 1
 Reviewer: AL
 2nd Reviewer: V

METHOD: Hexavalent Chromium (ASTM D7614)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 3/20-21/14
II.	Initial calibration	NA	
III.	Calibration verification	A	
IV.	Blanks	A	
V.	Matrix Spike/Matrix Spike Duplicates	N	Not required
VI.	Duplicates	A	Dup
VII.	Laboratory control samples	A	LCS/D
VIII.	Sample result verification	A	Detox, ICAL, CCAL, & batch QC recalculated
IX.	Overall assessment of data	A	
X.	Field duplicates	SW	(3,4) (9,10)
XI.	Field blanks	ND	FB=5,11 TB=6,12

Note: A = Acceptable ND = No compounds detected D = Duplicate
 N = Not provided/applicable R = Rinsate TB = Trip blank
 SW = See worksheet FB = Field blank EB = Equipment blank

Validated Samples: A/C

1	OAM 1 (03/20/14)	11	PAM-21 (03/21/14)	21		31	
2	OAM 2 (03/20/14)	12	PAM-31 (03/21/14)	22		32	
3	PAM-1 (03/20/14)	13	PAM-1 (03/20/14)DUP	23		33	
4	PAM-1D (03/20/14)	14	PAM-1D (03/20/14)DUP	24		34	
5	PAM-21 (03/20/14)	15	PAM-1 (03/21/14)DUP	25		35	
6	PAM-31 (03/20/14)	16	PAM-1D (03/21/14)DUP	26		36	
7	OAM 1 (03/21/14)	17		27		37	
8	OAM 2 (03/21/14)	18		28		38	
9	PAM-1 (03/21/14)	19		29		39	
10	PAM-1D (03/21/14)	20		30		40	

Notes: _____

Method: Inorganics (EPA Method recovery)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients > 0.995?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% ^{85-115%} QC limits?	✓			
Were titrant checks performed as required? (Level IV only)			✓	
Were balance checks performed as required? (Level IV only)			✓	
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. Matrix spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.			✓	
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL (≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were < 5X the CRDL.	✓			
V. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 31539AG

VALIDATION FINDINGS CHECKLIST

Page: 2 of 3
 Reviewer: [Signature]
 2nd Reviewer: _____

Validation Area	Yes	No	NA	Findings/Comments
VII. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were detection limits < RL?	✓			
VIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
IX. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target analytes were detected in the field duplicates.	✓			
X. Field blanks				
Field blanks were identified in this SDG.	✓			
Target analytes were detected in the field blanks.		✓		

Analyte	Concentration (ng/m ³)		RPD (≤ 20)	Qualifiers (Parents Only)
	3	4		
Hexavalent Chromium	0.0355	0.0298	17	

Analyte	Concentration (ng/m ³)		RPD (≤ 20)	Qualifiers (Parents Only)
	9	10		
Hexavalent Chromium	0.0136	0.0113	18	



LDC #: 31539AG

Validation Findings Worksheet
Initial and Continuing Calibration Calculation Verification

Page: 1 of 1
 Reviewer: [Signature]
 2nd Reviewer: _____

Method: Inorganics, Method See Cover

The correlation coefficient (r) for the calibration of Cr⁶⁺ was recalculated. Calibration date: 3/24/14

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$$\%R = \frac{\text{Found} \times 100}{\text{True}}$$

Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution
 True = concentration of each analyte in the ICV or CCV source

Type of analysis	Analyte	Standard	Conc. (mg/L)	Area	Recalculated	Reported	Acceptable (Y/N)
					r or r ²	r or r ²	
Initial calibration	Cr ⁶⁺	s1	0.1	0.000231	0.99996	0.99996	Y
		s2	0.1	0.000462			
		s3	0.2	0.000841			
		s4	0.5	0.002181			
		s5	1	0.00447			
		s6	2	0.008908			
Calibration verification		ICV	0.5	0.5477	110	-	
Calibration verification		CCV		0.5598	112	-	
Calibration verification				0.5699	114	-	

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 31539A6

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: GR
2nd Reviewer: [Signature]

METHOD: Inorganics, Method see cover

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$$\%R = \frac{\text{Found}}{\text{True}} \times 100$$
 Where, Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$$RPD = \frac{|S-D|}{(S+D)/2} \times 100$$
 Where, S = Original sample concentration
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated	Reported	Acceptable (Y/N)
					%R / RPD	%R / RPD	
LCS	Laboratory control sample	Cr ⁶⁺	0.484	0.463	104	104	Y
N	Matrix spike sample		(SSR-SR)				
B	Duplicate sample	Cr ⁶⁺	0.0397	0.0355	11.2	11.2	Y

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 31539A6

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
 Reviewer: OR
 2nd reviewer: [Signature]

METHOD: Inorganics, Method see cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

- Y N N/A Have results been reported and calculated correctly?
- Y N N/A Are results within the calibrated range of the instruments?
- Y N N/A Are all detection limits below the CRQL?

Compound (analyte) results for Cr⁶⁺ reported with a positive detect were recalculated and verified using the following equation:

Concentration =
$$\frac{\text{Area} - \text{Intercept}}{\text{Slope}} \left(\frac{\text{Vol}}{\text{Air Vol}} \right)$$

Recalculation:
$$\frac{0.0000105 + 0.0000138}{0.0004461} \left(\frac{10\text{mL}}{21.46\text{m}^3} \right) = 0.01241 \text{ ng/m}^3$$

#	Sample ID	Analyte	Reported Concentration (ng/m ³)	Calculated Concentration (ng/m ³)	Acceptable (Y/N)	
	1	Cr ⁶⁺	0.0124	0.0124	Y	
	2		0.0262	0.0262	Y	
	3		0.0355	0.0355		
	4		0.0298	0.0298		
	7		0.0111	0.0111		
	8		0.0148	0.0148		
	9		0.0136	0.0136		
	10		0.0113	0.0113		

Note: _____



CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 03/25/14 10:53

SUBMITTED: 03/21/14 to 03/22/14

AQS SITE

CODE:
SITE CODE:

Honeywell Hex Chrome Study

Description: OAM 1	Lab ID: 4032112-01	Sampled: 03/20/14 10:40
Matrix: Air	Sample Volume: 21.46 m ³	Received: 03/21/14 11:34
Comments:		Analysis Date: 03/24/14 14:19

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u> <u>ng/m³ Air</u>	<u>Flag</u>	<u>MDL</u> <u>ng/m³ Air</u>
Hexavalent Chromium	1854-02-99	0.0124		0.0036

03/25/14



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AQS SITE

CODE:
SITE CODE:

Honeywell Hex Chrome Study

Description: OAM 2

Lab ID: 4032112-02

Sampled: 03/20/14 11:26

Matrix: Air

Sample Volume: 21.74 m³

Received: 03/21/14 11:34

Comments:

Analysis Date: 03/24/14 14:49

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u>		<u>MDL</u>
		<u>ng/m³ Air</u>	<u>Flag</u>	
Hexavalent Chromium	1854-02-99	0.0262		0.0036

023/25/14



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FILE #: 3926.00

REPORTED: 03/25/14 10:53

SUBMITTED: 03/21/14 to 03/22/14

AQS SITE

CODE:

Honeywell Hex Chrome Study

Description: PAM-1	Lab ID: 4032112-03	Sampled: 03/20/14 09:44
Matrix: Air	Sample Volume: 21.45 m ³	Received: 03/21/14 11:34
Comments: Col 1		Analysis Date: 03/24/14 16:20

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u>		<u>MDL</u>
		<u>ng/m³ Air</u>	<u>Flag</u>	<u>ng/m³ Air</u>
Hexavalent Chromium	1854-02-99	0.0355		0.0036

Handwritten signature: CEC 3/25/14



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FILE #: 3926.00
REPORTED: 03/25/14 10:53
SUBMITTED: 03/21/14 to 03/22/14
AQS SITE
CODE:
SITE CODE: Honeywell Hex Chrome Study

ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 FAX: (410) 266-8912

Description: PAM-1D	Lab ID: 4032112-04	Sampled: 03/20/14 10:02
Matrix: Air	Sample Volume: 21.51 m ³	Received: 03/21/14 11:34
Comments: Col 2		Analysis Date: 03/24/14 16:40

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u>		<u>MDL</u>
		<u>ng/m³ Air</u>	<u>Flag</u>	<u>ng/m³ Air</u>
Hexavalent Chromium	1854-02-99	0.0298		0.0036



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AQS SITE

CODE:

Honeywell Hex Chrome Study

Description: PAM-21

Lab ID: 4032112-05

Sampled: 03/20/14 10:40

Matrix: Air

Sample Volume: 21.46 m³

Received: 03/21/14 11:34

Comments:

Analysis Date: 03/24/14 14:59

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u>		<u>MDL</u>
		<u>ng/m³ Air</u>	<u>Flag</u>	
Hexavalent Chromium	1854-02-99	ND	U	0.0036

02/25/14



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REPORTED: 03/25/14 10:53

SUBMITTED: 03/21/14 to 03/22/14

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-31

Lab ID: 4032112-06

Sampled: 03/20/14 10:39

Matrix: Air

Sample Volume: 21.46 m³

Received: 03/21/14 11:34

Comments:

Analysis Date: 03/24/14 15:09

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u>		<u>MDL</u>
		<u>ng/m³ Air</u>	<u>Flag</u>	
Hexavalent Chromium	1854-02-99	ND	U	0.0036

Eastern Research Group

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CE 3/25/14



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FILE #: 3926.00

REPORTED: 03/25/14 10:53

SUBMITTED: 03/21/14 to 03/22/14

AQS SITE

CODE:
SITE CODE:

Honeywell Hex Chrome Study

Description: OAM 1

Lab ID: 4032411-01

Sampled: 03/21/14 10:27

Matrix: Air

Sample Volume: 21.14 m³

Received: 03/22/14 10:06

Comments:

Analysis Date: 03/24/14 15:19

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u>		<u>MDL</u>
		<u>ng/m³ Air</u>	<u>Flag</u>	
Hexavalent Chromium	1854-02-99	0.0111		0.0036

CE 3/25/14



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FILE #: 3926.00

REPORTED: 03/25/14 10:53

SUBMITTED: 03/21/14 to 03/22/14

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: OAM 2

Lab ID: 4032411-02

Sampled: 03/21/14 11:55

Matrix: Air

Sample Volume: 20.89 m³

Received: 03/22/14 10:06

Comments:

Analysis Date: 03/24/14 15:29

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u>		<u>MDL</u>
		<u>ng/m³ Air</u>	<u>Flag</u>	
Hexavalent Chromium	1854-02-99	0.0148		0.0036

Eastern Research Group

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CR 2/25/14



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FILE #: 3926.00

REPORTED: 03/25/14 10:53

SUBMITTED: 03/21/14 to 03/22/14

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-1

Lab ID: 4032411-03

Sampled: 03/21/14 09:45

Matrix: Air

Sample Volume: 21.45 m³

Received: 03/22/14 10:06

Comments: Col 1

Analysis Date: 03/24/14 13:39

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u>		<u>MDL</u>
		<u>ng/m³ Air</u>	<u>Flag</u>	
Hexavalent Chromium	1854-02-99	0.0136		0.0036

Eastern Research Group

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C 11 3/25/14



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FILE #: 3926.00

REPORTED: 03/25/14 10:53

SUBMITTED: 03/21/14 to 03/22/14

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-1D

Lab ID: 4032411-04

Sampled: 03/21/14 09:59

Matrix: Air

Sample Volume: 21.42 m³

Received: 03/22/14 10:06

Comments: Col 2

Analysis Date: 03/24/14 13:59

Hexavalent Chromium

<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u> <u>ng/m³ Air</u>	<u>Flag</u>	<u>MDL</u> <u>ng/m³ Air</u>
Hexavalent Chromium	1854-02-99	0.0113		0.0036

023/25/14



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FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 03/25/14 10:53

SUBMITTED: 03/21/14 to 03/22/14

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-21

Lab ID: 4032411-05

Sampled: 03/21/14 10:17

Matrix: Air

Sample Volume: 21.42 m³

Received: 03/22/14 10:06

Comments:

Analysis Date: 03/24/14 15:38

Hexavalent Chromium

Results

MDL

Analyte

CAS Number

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

ND

U

0.0036

Eastern Research Group

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023/25/14



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FILE #: 3926.00

REPORTED: 03/25/14 10:53

SUBMITTED: 03/21/14 to 03/22/14

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-31

Lab ID: 4032411-06

Sampled: 03/21/14 10:28

Matrix: Air

Sample Volume: 21.14 m³

Received: 03/22/14 10:06

Comments:

Analysis Date: 03/24/14 17:00

Hexavalent Chromium

Results

MDL

Analyte

CAS Number

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

ND

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0.0036

CR-3/25/14