



LABORATORY DATA CONSULTANTS, INC.

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

January 15, 2015

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

Dear Mr. Boggs,

Enclosed is the final validation report for the fraction listed below. This SDG was received on January 13, 2015. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #33488:

SDG

5010643

Fraction

Hexavalent Chromium

The data validation was performed under EPA Level IV guidelines. The analyses were validated using the following documents, as applicable to each method:

- Air Monitoring Program Quality Assurance Project Plan, Area 1, Phase 1 Development, Version 1, Baltimore Works Site, Baltimore, Maryland, March 2014
- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, January 2010

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: December 31, 2014 through January 5, 2015
LDC Report Date: January 15, 2015
Matrix: Air
Parameters: Hexavalent Chromium
Validation Level: EPA Level IV
Laboratory: Eastern Research Group
Sample Delivery Group (SDG): 5010643

Sample Identification

OAM 1 (12/31/14)	PAM-3 (1/03/15)
OAM 2 (12/31/14)	PAM-4 (1/03/15)
PAM-1 (12/31/14)	PAM-21 (1/03/15)
PAM-1D (12/31/14)	PAM-31 (1/03/15)
PAM-2 (12/31/14)	OAM 1 (1/05/15)
PAM-3 (12/31/14)	OAM 2 (1/05/15)
PAM-4 (12/31/14)	PAM-1 (1/05/15)
PAM-21 (12/31/14)	PAM-1D (1/05/15)
PAM-31 (12/31/14)	PAM-2 (1/05/15)
OAM 1 (1/02/15)	PAM-3 (1/05/15)
OAM 2 (1/02/15)	PAM-4 (1/05/15)
PAM-1 (1/02/15)	PAM-21 (1/05/15)
PAM-1D (1/02/15)	PAM-31 (1/05/15)
PAM-3 (1/02/15)	PAM-1 (12/31/14)DUP
PAM-4 (1/02/15)	PAM-1D (12/31/14)DUP
PAM-21 (1/02/15)	PAM-1 (1/02/15)DUP
PAM-31 (1/02/15)	PAM-1D (1/02/15)DUP
OAM 1 (1/03/15)	PAM-1 (1/03/15)DUP
OAM2 (1/03/15)	PAM-1D (1/03/15)DUP
PAM-1 (1/03/15)	PAM-1 (1/05/15)DUP
PAM-1D (1/03/15)	PAM-1D (1/05/15)DUP
PAM-2 (1/03/15)	

The date was appended to the sample ID to differentiate between samples.

Introduction

This data review covers 43 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.
- 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. Continuing Calibration

Continuing calibration 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 (12/31/14), PAM-31 (1/02/15), PAM-31 (1/03/15), and PAM-31 (1/05/15) were identified as trip blanks. No hexavalent chromium was found.

Samples PAM-21 (12/31/14), PAM-21 (1/02/15), PAM-21 (1/03/15), and PAM-21 (1/05/15) were identified as field blanks. No hexavalent chromium was found.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) 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 (12/31/14) and PAM-1D (12/31/14), samples PAM-1 (1/02/15) and PAM-1D (1/02/15), samples PAM-1 (1/03/15) and PAM-1D (1/03/15), and samples PAM-1 (1/05/15) and PAM-1D (1/05/15) 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 (12/31/14)	PAM-1D (12/31/14)			
Hexavalent chromium	0.0261	0.0251	4 (≤20)	-	-

Analyte	Concentration (ng/m ³)		RPD (Limits)	Flags	A or P
	PAM-1 (1/02/15)	PAM-1D (1/02/15)			
Hexavalent chromium	0.0320	0.0329	3 (≤20)	-	-

Analyte	Concentration (ng/m ³)		RPD (Limits)	Flags	A or P
	PAM-1 (1/03/15)	PAM-1D (1/03/15)			
Hexavalent chromium	0.0571	0.0641	12 (≤20)	-	-

**Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Data Qualification Summary - SDG 5010643**

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

**Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG
5010643**

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 5010643**

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

LDC #: 33488A6

VALIDATION COMPLETENESS WORKSHEET

Date: 1/14/15

SDG #: 5010643

Level IV

Page: 1 of 1

Laboratory: Eastern Research Group

Reviewer: JD

2nd Reviewer: a

METHOD: (Analyte) 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.	Sample receipt/Technical holding times	A	12/31/14 - 1/5/15
II.	Initial calibration	A	
III.	Calibration verification	A	
IV.	Laboratory Blanks	A	
V.	Field blanks	ND	FB=(8)(17)(26)(34) TB=(9)(18)(21)(35)
VI.	Matrix Spike/Matrix Spike Duplicates	N	Not Required
VII.	Duplicate sample analysis	A	DUP
VIII.	Laboratory control samples	A	LSD
IX.	Field duplicates	SW	FD=(3,4)(2,13)(21,22)(30,31)*
X.	Sample result verification	A	
XI.	Overall assessment of data	A	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

* ND = No compounds detected
R = Rinse
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

SB=Source blank
OTHER:

	Client ID	Lab ID	Matrix	Date
1	OAM 1(12/31/14)	5010643-01	air	12/31/14
2	OAM 2(12/31/14)	5010643-02	air	12/31/14
3	PAM-1(12/31/14)	5010643-03	air	12/31/14
4	PAM-1D(12/31/14)	5010643-04	air	12/31/14
5	PAM-2(12/31/14)	5010643-05	air	12/31/14
6	PAM-3(12/31/14)	5010643-06	air	12/31/14
7	PAM-4(12/31/14)	5010643-07	air	12/31/14
8	PAM-21(12/31/14)	5010643-08	air	12/31/14
9	PAM-31(12/31/14)	5010643-09	air	12/31/14
10	OAM 1(01/02/15)	5010643-10	air	01/02/15
11	OAM 2(01/02/15)	5010643-11	air	01/02/15
12	PAM-1(01/02/15)	5010643-12	air	01/02/15
13	PAM-1D(01/02/15)	5010643-13	air	01/02/15
14	PAM-2(01/02/15)	5010643-14	air	01/02/15
15	PAM-3(01/02/15)	5010643-15	air	01/02/15
16	PAM-4(01/02/15)	5010643-16	air	01/02/15
17	PAM-21(01/02/15)	5010643-17	air	01/02/15

METHOD: (Analyte) Hexavalent Chromium (ASTM D7614)

	Client ID	Lab ID	Matrix	Date
18	PAM-31(01/02/15)	5010643-18	air	01/02/15
19	OAM 1(01/03/15)	5010643-19	air	01/03/15
20	OAM 2(01/03/15)	5010643-20	air	01/03/15
21	PAM-1(01/03/15)	5010643-21	air	01/03/15
22	PAM-1D(01/03/15)	5010643-22	air	01/03/15
23	PAM-2(01/03/15)	5010643-23	air	01/03/15
24	PAM-3(01/03/15)	5010643-24	air	01/03/15
25	PAM-4(01/03/15)	5010643-25	air	01/03/15
26	PAM-21(01/03/15)	5010643-26	air	01/03/15
27	PAM-31(01/03/15)	5010643-27	air	01/03/15
28	OAM 1(01/05/15)	5010643-28	air	01/05/15
29	OAM 2(01/05/15)	5010643-29	air	01/05/15
30	PAM-1(01/05/15)	5010643-30	air	01/05/15
31	PAM-1D(01/05/15)	5010643-31	air	01/05/15
32	PAM-3(01/05/15)	5010643-33	air	01/05/15
33	PAM-4(01/05/15)	5010643-34	air	01/05/15
34	PAM-21(01/05/15)	5010643-35	air	01/05/15
35	PAM-31(01/05/15)	5010643-36	air	01/05/15
36	PAM-1(12/31/14)DUP	5010643-03DUP	air	12/31/14
37	PAM-1D(12/31/14)DUP	5010643-04DUP	air	12/31/14
38	PAM-1(01/02/15)DUP	5010643-12DUP	air	01/02/15
39	PAM-1D(01/02/15)DUP	5010643-13DUP	air	01/02/15
40	PAM-1(01/03/15)DUP	5010643-21DUP	air	01/03/15
41	PAM-1D(01/03/15)DUP	5010643-22DUP	air	01/03/15
42	PAM-1(01/05/15)DUP	5010643-30DUP	air	01/05/15
43	PAM-1D(01/05/15)DUP	5010643-31DUP	air	01/05/15

Method: Inorganics (EPA Method See Cover)

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% QC limits? <u>85-115</u>	/			
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 #: 33188A10

VALIDATION FINDINGS CHECKLIST

Page: 2 of 2
 Reviewer: SD
 2nd Reviewer: AL

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

Inorganics: Method See Cover

Analyte	Concentration (ng/m3)		RPD (≤20)	Qual.
	3	4		
Hexavalent Chromium	0.0261	0.0251	4	

Analyte	Concentration (ng/m3)		RPD (≤20)	Qual.
	12	13		
Hexavalent Chromium	0.0320	0.0329	3	

Analyte	Concentration (ng/m3)		RPD (≤20)	Qual.
	21	22		
Hexavalent Chromium	0.0571	0.0641	12	

LDC #: 33488AP

Validation Findings Worksheet
Initial and Continuing Calibration Calculation Verification

Page: 1 of 1
 Reviewer: JD
 2nd Reviewer: 2

Method: Inorganics, Method See Cover

The correlation coefficient (r) for the calibration of C₇₊₆ was recalculated. Calibration date: 1/07/15

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. (ng/ml)	Area	Recalculated	Reported	Acceptable (Y/N)
					r or r ²	r or r ²	
Initial calibration	C ₇₊₆	s1	0.05	0.0000123	0.99920	0.99920	Y
		s2	0.1	0.0000323			
		s3	0.2	0.0000784			
		s4	0.5	0.0002107			
		s5	1	0.0003887			
		s6	2	0.0008471			
ICV 11:27 Calibration verification	C ₇₊₆	<u>Found</u> 0.5139 ng/ml	<u>True</u> 0.5 ng/ml		102.8% _R	102.8% _R	↓
CCV 12:26 Calibration verification	C ₇₊₆	0.5165 ng/ml	0.5 ng/ml		103.3% _R	103.3% _R	↓
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.

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

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 11:57	Laboratory control sample	Cr ⁺⁶	1.05ng/ml	1.00ng/ml	105%R	105%R	Y
N	Matrix spike sample		(SSR-SR)				
DUP 12:56	Duplicate sample	Cr ⁺⁶	0.0252ng/m ³	0.0262ng/m ³	3.89%RPD	3.53%RPD	Y

Comments: _____

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 (2) Cr+6 reported with a positive detect were recalculated and verified using the following equation:

Concentration = $(A - C_0) / C_1$
 $A = 0.0000098$
 $C_0 = -1.05E-05$
 $C_1 = 0.0004240$

$V_f = 10 \text{ ml}$
 $m^3 = 21.34$

Recalculation: $\frac{(0.0000098) - (-1.05E-05)}{0.0004240} = 0.0479 \text{ ng/ml}$

$\frac{(0.0479 \text{ ng/ml})(10 \text{ ml})}{21.34 \text{ m}^3} = 0.224 \text{ ng/m}^3$

#	Sample ID	Analyte	Reported Concentration (ng/m ³)	Calculated Concentration (ng/m ³)	Acceptable (Y/N)
	1	Cr+6	ND	ND	Y
	2		0.0224	0.0224	Y
	3		0.0261	0.0262	Y*
	4		0.0251	0.0252	Y*
	5		0.0312	0.313	Y*
	6		ND	ND	Y
	7		0.0316	0.0316	Y
	8		ND	ND	Y
	9		ND	ND	Y
	10		ND	ND	Y
	11		0.0238	0.0238	Y
	12		0.0320	0.0321	Y*
	13		0.0329	0.0329	Y
	14		0.0220	0.0221	Y*
	15		ND	ND	Y
	16		0.0401	0.0401	Y
	17		ND	ND	Y
	18		ND	ND	Y
	19		0.0403	0.0403	Y
	20		0.0536	0.0536	Y

Note: *Rounding

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 (21) Cr⁺⁶ reported with a positive detect were recalculated and verified using the following equation:

Concentration = $(A \cdot C_0) / C_1$

$C_0 = 1.25 \text{ E} - 05$
 $C_1 = 0.0003826$
 $A = 0.000035$

$V_f = 10 \text{ ml}$
 $m^3 = 21.73$

Recalculation: $\frac{(0.000035) - (-1.25 \text{ E} - 05)}{0.0003826} = 0.1242 \text{ ng/ml}$

$\frac{(0.1242 \text{ ng/ml}) (10 \text{ ml})}{21.73 \text{ m}^3} = 0.0571 \text{ ng/m}^3$

#	Sample ID	Analyte	Reported Concentration (ng/m ³)	Calculated Concentration (ng/m ³)	Acceptable (Y/N)
	21	Cr ⁺⁶	0.0571	0.0571	Y
	22		0.0641	0.0641	Y
	23		0.0792	0.0792	↓
	24		0.0454	0.0453	Y*
	25		0.0600	0.0579	Y*
	26		ND	ND	Y
	27		ND	ND	
	28		0.0188	0.0188	
	29		ND	ND	
	30		ND	ND	
	31		ND	ND	
	32		ND	ND	
	33		0.0253	0.0253	
	34		ND	ND	
	35		ND	ND	↓

Note: * Rounding



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: 01/13/15 13:17

SUBMITTED: 01/06/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: OAM 1	Lab ID: 5010643-01	Sampled: 12/31/14 14:25
Matrix: Air	Sample Volume: 21.24 m ³	Received: 01/06/15 11:49
Comments: Start Time 12/30/14 14:49		Analysis Date: 01/07/15 14:47

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 15 2015

Initials: *CR*

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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FILE #: 3926.00

REPORTED: 01/13/15 13:17

SUBMITTED: 01/06/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: OAM 2	Lab ID: 5010643-02	Sampled: 12/31/14 14:57
Matrix: Air	Sample Volume: 21.34 m ³	Received: 01/06/15 11:49
Comments: Start Time 12/30/14 15:14		Analysis Date: 01/07/15 14:57

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 15 2015

Initials: *CR*

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FILE #: 3926.00

REPORTED: 01/13/15 13:17

SUBMITTED: 01/06/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description:	PAM-1	Lab ID:	5010643-03	Sampled:	12/31/14 15:37
Matrix:	Air	Sample Volume:	20.97 m ³	Received:	01/06/15 11:49
Comments:	Col 1 Start Time 12/30/14 16:31			Analysis Date:	01/07/15 14:06

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0261		0.0036

JAN 15 2015

Initials: CR

Eastern Research Group

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SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-1D	Lab ID: 5010643-04	Sampled: 12/31/14 15:38
Matrix: Air	Sample Volume: 20.79 m ³	Received: 01/06/15 11:49
Comments: Col 2 Start Time 12/30/14 16:32		Analysis Date: 01/07/15 13:06

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0251		0.0036

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FILE #: 3926.00

REPORTED: 01/13/15 13:17

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AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description:	PAM-2	Lab ID:	5010643-05	Sampled:	12/31/14 15:28
Matrix:	Air	Sample Volume:	20.97 m ³	Received:	01/06/15 11:49
Comments:	Start Time 12/30/14 16:10			Analysis Date:	01/07/15 15:06

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0312		0.0036

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AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-3	Lab ID: 5010643-06	Sampled: 12/31/14 15:21
Matrix: Air	Sample Volume: 21.04 m ³	Received: 01/06/15 11:49
Comments: Start Time 12/30/14 15:58		Analysis Date: 01/07/15 15:16

Hexavalent Chromium by SOP ERG-MOR-063

<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

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AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-4

Lab ID: 5010643-07

Sampled: 12/31/14 15:13

Matrix: Air

Sample Volume: 21.25 m³

Received: 01/06/15 11:49

Comments: Start Time 12/30/14 15:36

Analysis Date: 01/07/15 17:25

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0316		0.0036

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AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-21	Lab ID: 5010643-08	Sampled: 12/31/14 00:00
Matrix: Air	Sample Volume: 20.97 m ³	Received: 01/06/15 11:49
Comments:		Analysis Date: 01/07/15 15:36

Hexavalent Chromium by SOP ERG-MOR-063

<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

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AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-31

Lab ID: 5010643-09

Sampled: 12/31/14 00:00

Matrix: Air

Sample Volume: 21.04 m³

Received: 01/06/15 11:49

Comments:

Analysis Date: 01/07/15 15:46

Hexavalent Chromium by SOP ERG-MOR-063

<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

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AQS SITE

CODE: Honeywell Hex Chrome Study
SITE CODE:

Description: OAM 1	Lab ID: 5010643-10	Sampled: 01/02/15 14:30
Matrix: Air	Sample Volume: 21.36 m ³	Received: 01/06/15 11:49
Comments: Start Time 1/1/15 14:46		Analysis Date: 01/07/15 15:56

Hexavalent Chromium by SOP ERG-MOR-063

<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

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REPORTED: 01/13/15 13:17

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AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: OAM 2	Lab ID: 5010643-11	Sampled: 01/02/15 14:52
Matrix: Air	Sample Volume: 21.46 m ³	Received: 01/06/15 11:49
Comments: Start Time 1/1/15 15:01		Analysis Date: 01/07/15 16:06

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0238		0.0036

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AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description:	PAM-1	Lab ID:	5010643-12	Sampled:	01/02/15 15:52
Matrix:	Air	Sample Volume:	21.52 m ³	Received:	01/06/15 11:49
Comments:	Col 1 Start Time 1/1/15 15:57			Analysis Date:	01/07/15 13:26

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0320		0.0036

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AQS SITE

CODE: Honeywell Hex Chrome Study
SITE CODE:

Description: PAM-ID	Lab ID: 5010643-13	Sampled: 01/02/15 15:56
Matrix: Air	Sample Volume: 21.58 m ³	Received: 01/06/15 11:49
Comments: Col 2 Start Time 1/1/15 15:57		Analysis Date: 01/07/15 17:56

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0329		0.0036

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AQS SITE

CODE: Honeywell Hex Chrome Study
SITE CODE:

Description: PAM-2	Lab ID: 5010643-14	Sampled: 01/02/15 15:40
Matrix: Air	Sample Volume: 21.48 m ³	Received: 01/06/15 11:49
Comments: Start Time 1/1/15 15:48		Analysis Date: 01/07/15 16:16

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0220		0.0036

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AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-3

Lab ID: 5010643-15

Sampled: 01/02/15 15:30

Matrix: Air

Sample Volume: 21.65 m³

Received: 01/06/15 11:49

Comments: Start Time 1/1/15 15:27

Analysis Date: 01/07/15 16:46

Hexavalent Chromium by SOP ERG-MOR-063

<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

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AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-4	Lab ID: 5010643-16	Sampled: 01/02/15 15:08
Matrix: Air	Sample Volume: 21.45 m ³	Received: 01/06/15 11:49
Comments: Start Time 1/1/15 15:18		Analysis Date: 01/07/15 16:55

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0401		0.0036

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AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-21

Lab ID: 5010643-17

Sampled: 01/02/15 00:00

Matrix: Air

Sample Volume: 21.48 m³

Received: 01/06/15 11:49

Comments:

Analysis Date: 01/07/15 17:05

Hexavalent Chromium by SOP ERG-MOR-063

<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

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REPORTED: 01/13/15 13:17

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AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-31	Lab ID: 5010643-18	Sampled: 01/02/15 00:00
Matrix: Air	Sample Volume: 21.65 m ³	Received: 01/06/15 11:49
Comments:		Analysis Date: 01/07/15 17:15

Hexavalent Chromium by SOP ERG-MOR-063

<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

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REPORTED: 01/13/15 13:17

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AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: OAM 1

Lab ID: 5010643-19

Sampled: 01/03/15 14:11

Matrix: Air

Sample Volume: 21.27 m³

Received: 01/06/15 11:49

Comments: Start Time 1/2/15 14:33

Analysis Date: 01/08/15 16:44

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0403		0.0036

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REPORTED: 01/13/15 13:17

SUBMITTED: 01/06/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: OAM 2	Lab ID: 5010643-20	Sampled: 01/03/15 14:56
Matrix: Air	Sample Volume: 21.36 m ³	Received: 01/06/15 11:49
Comments: Start Time 1/2/15 14:55		Analysis Date: 01/08/15 14:25

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0536		0.0036

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AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-1	Lab ID: 5010643-21	Sampled: 01/03/15 16:04
Matrix: Air	Sample Volume: 21.73 m ³	Received: 01/06/15 11:49
Comments: Col 1 Start Time 1/2/15 15:56		Analysis Date: 01/08/15 12:16

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0571		0.0036

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SUBMITTED: 01/06/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-1D	Lab ID: 5010643-22	Sampled: 01/03/15 16:00
Matrix: Air	Sample Volume: 21.74 m ³	Received: 01/06/15 11:49
Comments: Col 2 Start Time 1/2/15 15:59		Analysis Date: 01/08/15 13:35

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0641		0.0036

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AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-2	Lab ID: 5010643-23	Sampled: 01/03/15 15:44
Matrix: Air	Sample Volume: 21.59 m ³	Received: 01/06/15 11:49
Comments: Start Time 1/2/15 15:44		Analysis Date: 01/08/15 16:54

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0792		0.0036

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AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-3	Lab ID: 5010643-24	Sampled: 01/03/15 15:34
Matrix: Air	Sample Volume: 21.51 m ³	Received: 01/06/15 11:49
Comments: Start Time 1/2/15 15:34		Analysis Date: 01/08/15 14:45

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0454		0.0036

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SUBMITTED: 01/06/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-4

Lab ID: 5010643-25

Sampled: 01/03/15 15:05

Matrix: Air

Sample Volume: 21.5 m³

Received: 01/06/15 11:49

Comments: Start Time 1/2/15 15:11

Analysis Date: 01/08/15 14:55

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0600		0.0036

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REPORTED: 01/13/15 13:17

SUBMITTED: 01/06/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-21	Lab ID: 5010643-26	Sampled: 01/03/15 00:00
Matrix: Air	Sample Volume: 21.59 m ³	Received: 01/06/15 11:49
Comments:		Analysis Date: 01/08/15 15:05

Hexavalent Chromium by SOP ERG-MOR-063

<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

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AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-31

Lab ID: 5010643-27

Sampled: 01/03/15 00:00

Matrix: Air

Sample Volume: 21.51 m³

Received: 01/06/15 11:49

Comments:

Analysis Date: 01/08/15 15:15

Hexavalent Chromium by SOP ERG-MOR-063

<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

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REPORTED: 01/13/15 13:17

SUBMITTED: 01/06/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: OAM 1	Lab ID: 5010643-28	Sampled: 01/05/15 15:13
Matrix: Air	Sample Volume: 21.64 m ³	Received: 01/06/15 11:49
Comments: Start Time 1/4/15 15:10		Analysis Date: 01/08/15 17:04

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0188		0.0036

JAN 15 2015

Initials: *CR*



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: 01/13/15 13:17

SUBMITTED: 01/06/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: OAM 2

Lab ID: 5010643-29

Sampled: 01/05/15 15:35

Matrix: Air

Sample Volume: 21.81 m³

Received: 01/06/15 11:49

Comments: Start Time 1/4/15 15:21

Analysis Date: 01/08/15 15:35

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 15 2015

Initials: *CR*



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FILE #: 3926.00

REPORTED: 01/13/15 13:17

SUBMITTED: 01/06/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-1

Lab ID: 5010643-30

Sampled: 01/05/15 16:34

Matrix: Air

Sample Volume: 22.23 m³

Received: 01/06/15 11:49

Comments: Col 1 Start Time 1/4/15 15:52

Analysis Date: 01/08/15 12:55

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 15 2015

Initials: *ER*

Eastern Research Group

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FILE #: 3926.00

REPORTED: 01/13/15 13:17

SUBMITTED: 01/06/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-1D

Lab ID: 5010643-31

Sampled: 01/05/15 16:37

Matrix: Air

Sample Volume: 22.27 m³

Received: 01/06/15 11:49

Comments: Col 2 Start Time 1/4/15 15:52

Analysis Date: 01/08/15 13:15

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 15 2015

Initials: ER



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FILE #: 3926.00

REPORTED: 01/13/15 13:17

SUBMITTED: 01/06/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-3	Lab ID: 5010643-33	Sampled: 01/05/15 16:17
Matrix: Air	Sample Volume: 22.15 m ³	Received: 01/06/15 11:49
Comments: Start Time 1/4/15 15:40		Analysis Date: 01/08/15 15:45

Hexavalent Chromium by SOP ERG-MOR-063

<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

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ATTN: Mr. Jeff Boggs

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FILE #: 3926.00

REPORTED: 01/13/15 13:17

SUBMITTED: 01/06/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-4	Lab ID: 5010643-34	Sampled: 01/05/15 15:52
Matrix: Air	Sample Volume: 21.87 m ³	Received: 01/06/15 11:49
Comments: Start Time 1/4/15 15:34		Analysis Date: 01/08/15 17:37

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0253		0.0036

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Initials: ER



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FILE #: 3926.00

REPORTED: 01/13/15 13:17

SUBMITTED: 01/06/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-21	Lab ID: 5010643-35	Sampled: 01/05/15 00:00
Matrix: Air	Sample Volume: 22.15 m ³	Received: 01/06/15 11:49
Comments:		Analysis Date: 01/08/15 16:24

Hexavalent Chromium by SOP ERG-MOR-063

<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

IAN 15 2015

Initials: ER



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FILE #: 3926.00

REPORTED: 01/13/15 13:17

SUBMITTED: 01/06/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-31

Lab ID: 5010643-36

Sampled: 01/05/15 00:00

Matrix: Air

Sample Volume: 22.15 m³

Received: 01/06/15 11:49

Comments:

Analysis Date: 01/08/15 16:34

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 15 2015

Initials: CR



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

January 15, 2015

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

Dear Mr. Boggs,

Enclosed is the final validation report for the fraction listed below. This SDG was received on January 14, 2015. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #33502:

SDG

Fraction

5010733/5010816

Hexavalent Chromium

The data validation was performed under EPA Level IV guidelines. The analyses were validated using the following documents, as applicable to each method:

- Air Monitoring Program Quality Assurance Project Plan, Area 1, Phase 1 Development, Version 1, Baltimore Works Site, Baltimore, Maryland, March 2014
- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, January 2010

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: January 6 through January 7, 2015
LDC Report Date: January 15, 2015
Matrix: Air
Parameters: Hexavalent Chromium
Validation Level: EPA Level IV
Laboratory: Eastern Research Group
Sample Delivery Group (SDG): 5010733/5010816

Sample Identification

OAM 1 (1/06/15)	PAM-1 (1/07/15)DUP
OAM 2 (1/06/15)	PAM-1D (1/07/15)DUP
PAM-1 (1/06/15)	
PAM-1D (1/06/15)	
PAM-2 (1/06/15)	
PAM-3 (1/06/15)	
PAM-4 (1/06/15)	
PAM-21 (1/06/15)	
PAM-31 (1/06/15)	
OAM 1 (1/07/15)	
OAM 2 (1/07/15)	
PAM-1 (1/07/15)	
PAM-1D (1/07/15)	
PAM-2 (1/07/15)	
PAM-3 (1/07/15)	
PAM-4 (1/07/15)	
PAM-21 (1/07/15)	
PAM-31 (1/07/15)	
PAM-1 (1/06/15)DUP	
PAM-1D (1/06/15)DUP	

The date was appended to the sample ID to differentiate between samples.

Introduction

This data review covers 22 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.
- 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. Continuing Calibration

Continuing calibration 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 (1/06/15) and PAM-31 (1/07/15) were identified as trip blanks. No hexavalent chromium was found.

Samples PAM-21 (1/06/15) and PAM-21 (1/07/15) were identified as field blanks. No hexavalent chromium was found.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analysis was not required by the method.

VI. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results 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 (1/06/15) and PAM-1D (1/06/15) and samples PAM-1 (1/07/15) and PAM-1D (1/07/15) 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 (1/06/15)	PAM-1D (1/06/15)			
Hexavalent chromium	0.0322	0.0359	11 (≤20)	-	-

Analyte	Concentration (ng/m ³)		RPD (Limits)	Flags	A or P
	PAM-1 (1/07/15)	PAM-1D (1/07/15)			
Hexavalent chromium	0.0140	0.0134	4 (≤20)	-	-

**Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Data Qualification Summary - SDG 5010733/5010816**

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

**Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG
5010733/5010816**

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
5010733/5010816**

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

LDC #: 33502A6

VALIDATION COMPLETENESS WORKSHEET

Date: 01/06/15

SDG #: 5010733/5010816

Level IV

Page: 1 of 2

Laboratory: Eastern Research Group

Reviewer: JD

2nd Reviewer: AL

METHOD: (Analyte) 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.	Sample receipt/Technical holding times	A	01/06-07/15
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	A	
V	Field blanks	ND	FB=(8)(17) TB=(9)(18)
VI.	Matrix Spike/Matrix Spike Duplicates	N	Not Required
VII.	Duplicate sample analysis	A	DUP
VIII.	Laboratory control samples	A	LCS/D
IX.	Field duplicates	SW	FD=(3,4) (12,13)
X.	Sample result verification	A	
XI	Overall assessment of data	A	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

SB=Source blank
OTHER:

	Client ID	Lab ID	Matrix	Date
1	OAM 1(01/06/15)	5010733-01	air	01/06/15
2	OAM 2(01/06/15)	5010733-02	air	01/06/15
3	PAM-1(01/06/15)	5010733-03	air	01/06/15
4	PAM-1D(01/06/15)	5010733-04	air	01/06/15
5	PAM-2(01/06/15)	5010733-05	air	01/06/15
6	PAM-3(01/06/15)	5010733-06	air	01/06/15
7	PAM-4(01/06/15)	5010733-07	air	01/06/15
8	PAM-21(01/06/15)	5010733-08	air	01/06/15
9	PAM-31(01/06/15)	5010733-09	air	01/06/15
10	OAM 1(01/07/15)	5010816-01	air	01/07/15
11	OAM 2(01/07/15)	5010816-02	air	01/07/15
12	PAM-1(01/07/15)	5010816-03	air	01/07/15
13	PAM-1D(01/07/15)	5010816-04	air	01/07/15
14	PAM-2(01/07/15)	5010816-05	air	01/07/15
15	PAM-3(01/07/15)	5010816-06	air	01/07/15
16	PAM-4(01/07/15)	5010816-07	air	01/07/15
17	PAM-21(01/07/15)	5010816-08	air	01/07/15

LDC #: 33502A6 **VALIDATION COMPLETENESS WORKSHEET**

SDG #: 5010733/5010816

Laboratory: Eastern Research Group

Level IV

Date: 1/15/15

Page: 2 of 2

Reviewer: JD

2nd Reviewer: OR

METHOD: (Analyte) Hexavalent Chromium (ASTM D7614)

	Client ID	Lab ID	Matrix	Date
18	PAM-31(01/07/15)	5010816-09	air	01/07/15
19	PAM-1(01/06/15)DUP	5010733-03DUP	air	01/06/15
20	PAM-1D(01/06/15)DUP	5010733-04DUP	air	01/06/15
21	PAM-1(01/07/15)DUP	5010816-03DUP	air	01/07/15
22	PAM-1D(01/07/15)DUP	5010816-04DUP	air	01/07/15

Method: Inorganics (EPA Method See Lab)

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% QC limits? <u>85-115</u>	/			
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 #: 3350246

VALIDATION FINDINGS CHECKLIST

Page: 2 of 2
 Reviewer: 30
 2nd Reviewer: OK

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

Inorganics: Method See Cover

Analyte	Concentration (ng/m3)		RPD (≤20)	Qual.
	3	4		
Hexavalent Chromium	0.0322	0.0359	11	

Analyte	Concentration (ng/m3)		RPD (≤20)	Qual.
	12	13		
Hexavalent Chromium	0.0140	0.0134	4	

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

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 12:26	Laboratory control sample	Cr ⁺⁶	1.025 ng/ml	1.00 ng/ml	103%R	103%R	
N	Matrix spike sample		(SSR-SR)				
DUP 13:26	Duplicate sample	Cr ⁺⁶	0.0315 ng/m ³	0.0323 ng/m ³	2.51%RPD	2.07%RPD	YK

Comments: *Rounding

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 (13) Cr⁺⁶ reported with a positive detect were recalculated and verified using the following equation:

Concentration = $A - C_0 / C_1$
 $C_0 = -7.75E-06$
 $C_1 = 0.0004381$
 $A = 0.000005$

$V_f = 10 \text{ ml}$
 $m^3 = 21.78$
 $(\text{ng/ml} \times \text{ul}) / m^3 = \text{ng/m}^3$

Recalculation: $\frac{0.000005 - (-7.55E-06)}{0.0004381} = 0.0291 \text{ ng/ml}$
 $\frac{(0.0291 \text{ ng/ml})(10 \text{ ml})}{21.78 \text{ m}^3} = 0.0134 \text{ ng/m}^3$

#	Sample ID	Analyte	Reported Concentration (ng/m ³)	Calculated Concentration (ng/m ³)	Acceptable (Y/N)
	1	Cr ⁺⁶	0.0340	0.0340	Y
	2		0.0400	0.0400	↓
	3		0.0322	0.0323	Y*
	4		0.0359	0.0359	Y
	5		0.0420	0.0421	Y*
	6		0.0402	0.0403	Y*
	7		0.0340	0.0340	Y
	8		ND	ND	↓
	9		ND	ND	↓
	10		ND	ND	↓
	11		ND	ND	↓
	12		0.0140	0.0141	Y*
	13		0.0134	0.0134	Y
	14		ND	ND	↓
	15		ND	ND	↓
	16		0.090	0.090	↓
	17		ND	ND	↓
	18		ND	ND	↓

Note: *Rounding



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FILE #: 3926.00

REPORTED: 01/14/15 14:16

SUBMITTED: 01/07/15 to 01/08/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: OAM 1

Lab ID: 5010733-01

Sampled: 01/06/15 14:41

Matrix: Air

Sample Volume: 21.07 m³

Received: 01/07/15 11:23

Comments: Start Time 1/5/15 15:16

Analysis Date: 01/13/15 15:18

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0340		0.0036

JAN 15 2015

Initials: *CR*

Eastern Research Group

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FILE #: 3926.00

REPORTED: 01/14/15 14:16

SUBMITTED: 01/07/15 to 01/08/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: OAM 2	Lab ID: 5010733-02	Sampled: 01/06/15 15:08
Matrix: Air	Sample Volume: 21.16 m ³	Received: 01/07/15 11:23
Comments: Start Time 1/5/15 15:38		Analysis Date: 01/13/15 15:28

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0400		0.0036

JAN 15 2015

Initials: *ER*



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FILE #: 3926.00

REPORTED: 01/14/15 14:16

SUBMITTED: 01/07/15 to 01/08/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-1

Lab ID: 5010733-03

Sampled: 01/06/15 16:10

Matrix: Air

Sample Volume: 21.18 m³

Received: 01/07/15 11:23

Comments: Col 1 Start Time 1/5/15 16:37

Analysis Date: 01/13/15 13:16

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0322		0.0036

JAN 15 2015

Initials: *ER*

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: 01/14/15 14:16

SUBMITTED: 01/07/15 to 01/08/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1D	Lab ID: 5010733-04	Sampled: 01/06/15 16:12
Matrix: Air	Sample Volume: 21.18 m ³	Received: 01/07/15 11:23
Comments: Col 2 Start Time 1/5/15 16:40		Analysis Date: 01/13/15 13:36

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0359		0.0036

JAN 15 2015

Initials: ER

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FILE #: 3926.00

REPORTED: 01/14/15 14:16

SUBMITTED: 01/07/15 to 01/08/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-2	Lab ID: 5010733-05	Sampled: 01/06/15 15:57
Matrix: Air	Sample Volume: 21.15 m ³	Received: 01/07/15 11:23
Comments: Start Time 1/5/15 16:27		Analysis Date: 01/13/15 15:38

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0420		0.0036

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FILE #: 3926.00

REPORTED: 01/14/15 14:16

SUBMITTED: 01/07/15 to 01/08/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-3

Lab ID: 5010733-06

Sampled: 01/06/15 15:47

Matrix: Air

Sample Volume: 21.12 m³

Received: 01/07/15 11:23

Comments: Start Time 1/5/15 16:19

Analysis Date: 01/13/15 15:48

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0402		0.0036

JAN 15 2015

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FILE #: 3926.00

REPORTED: 01/14/15 14:16

SUBMITTED: 01/07/15 to 01/08/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-4

Lab ID: 5010733-07

Sampled: 01/06/15 15:35

Matrix: Air

Sample Volume: 21.3 m³

Received: 01/07/15 11:23

Comments: Start Time 1/5/15 15:55

Analysis Date: 01/13/15 15:58

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0340		0.0036

JAN 15 2015

Initials: *CR*

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FILE #: 3926.00

REPORTED: 01/14/15 14:16

SUBMITTED: 01/07/15 to 01/08/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-21

Lab ID: 5010733-08

Sampled: 01/06/15 00:00

Matrix: Air

Sample Volume: 21.15 m³

Received: 01/07/15 11:23

Comments:

Analysis Date: 01/13/15 16:08

Hexavalent Chromium by SOP ERG-MOR-063

<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

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Initials: *CR*

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FILE #: 3926.00

REPORTED: 01/14/15 14:16

SUBMITTED: 01/07/15 to 01/08/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-31

Lab ID: 5010733-09

Sampled: 01/06/15 00:00

Matrix: Air

Sample Volume: 21.12 m³

Received: 01/07/15 11:23

Comments:

Analysis Date: 01/13/15 16:18

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 15 2015

Initials: *CR*

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FILE #: 3926.00

REPORTED: 01/14/15 14:16

SUBMITTED: 01/07/15 to 01/08/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: OAM 1

Lab ID: 5010816-01

Sampled: 01/07/15 14:51

Matrix: Air

Sample Volume: 21.69 m³

Received: 01/08/15 11:33

Comments: Start Time 1/6/15 14:45

Analysis Date: 01/13/15 16:28

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 15 2015

Initials: *ER*



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ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/14/15 14:16

SUBMITTED: 01/07/15 to 01/08/15

AQS SITE

CODE: Honeywell Hex Chrome Study
SITE CODE:

Description: OAM 2	Lab ID: 5010816-02	Sampled: 01/07/15 15:10
Matrix: Air	Sample Volume: 21.58 m ³	Received: 01/08/15 11:33
Comments: Start Time 1/6/15 15:11		Analysis Date: 01/13/15 16:38

Hexavalent Chromium by SOP ERG-MOR-063

<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

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Initials: *CR*



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Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/14/15 14:16

SUBMITTED: 01/07/15 to 01/08/15

AQS SITE

CODE: Honeywell Hex Chrome Study
SITE CODE:

Description: PAM-1	Lab ID: 5010816-03	Sampled: 01/07/15 16:25
Matrix: Air	Sample Volume: 21.78 m ³	Received: 01/08/15 11:33
Comments: Col 1 Start Time 1/6/15 16:13		Analysis Date: 01/13/15 14:36

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0140		0.0036

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FILE #: 3926.00

REPORTED: 01/14/15 14:16

SUBMITTED: 01/07/15 to 01/08/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-1D

Lab ID: 5010816-04

Sampled: 01/07/15 16:28

Matrix: Air

Sample Volume: 21.78 m³

Received: 01/08/15 11:33

Comments: Col 2 Start Time 1/6/15 16:16

Analysis Date: 01/13/15 14:16

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0134		0.0036

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FILE #: 3926.00

REPORTED: 01/14/15 14:16

SUBMITTED: 01/07/15 to 01/08/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-2	Lab ID: 5010816-05	Sampled: 01/07/15 16:08
Matrix: Air	Sample Volume: 21.72 m ³	Received: 01/08/15 11:33
Comments: Start Time 1/6/15 16:00		Analysis Date: 01/13/15 16:47

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 15 2015

Initials: *ER*

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FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/14/15 14:16

SUBMITTED: 01/07/15 to 01/08/15

AQS SITE

CODE: Honeywell Hex Chrome Study
SITE CODE:

Description: PAM-3	Lab ID: 5010816-06	Sampled: 01/07/15 15:50
Matrix: Air	Sample Volume: 21.6 m ³	Received: 01/08/15 11:33
Comments: Start Time 1/6/15 15:50		Analysis Date: 01/13/15 17:17

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 15 2015

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FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/14/15 14:16

SUBMITTED: 01/07/15 to 01/08/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-4

Lab ID: 5010816-07

Sampled: 01/07/15 15:35

Matrix: Air

Sample Volume: 21.55 m³

Received: 01/08/15 11:33

Comments: Start Time 1/6/15 15:37

Analysis Date: 01/13/15 17:27

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0190		0.0036

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FILE #: 3926.00

REPORTED: 01/14/15 14:16

SUBMITTED: 01/07/15 to 01/08/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-21

Lab ID: 5010816-08

Sampled: 01/07/15 00:00

Matrix: Air

Sample Volume: 21.72 m³

Received: 01/08/15 11:33

Comments:

Analysis Date: 01/13/15 17:37

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 15 2015

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FILE #: 3926.00

REPORTED: 01/14/15 14:16

SUBMITTED: 01/07/15 to 01/08/15

AQS SITE

CODE: Honeywell Hex Chrome Study
SITE CODE:

Description: PAM-31	Lab ID: 5010816-09	Sampled: 01/07/15 00:00
Matrix: Air	Sample Volume: 21.6 m ³	Received: 01/08/15 11:33
Comments:		Analysis Date: 01/13/15 17:47

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 15 2015

Initials: *CR*

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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

January 28, 2015

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

Dear Mr. Boggs,

Enclosed are the final validation reports for the fraction listed below. These SDGs were received on January 27, 2015. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #33590:

SDG

Fraction

5010919/5011314
5012023/5012118

Hexavalent Chromium

The data validation was performed under EPA Level IV guidelines. The analyses were validated using the following documents, as applicable to each method:

- Air Monitoring Program Quality Assurance Project Plan, Area 1, Phase 1 Development, Version 1, Baltimore Works Site, Baltimore, Maryland, March 2014
- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, January 2010

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: January 8 through January 9, 2014
LDC Report Date: January 28, 2015
Matrix: Air
Parameters: Hexavalent Chromium
Validation Level: EPA Level IV
Laboratory: Eastern Research Group
Sample Delivery Group (SDG): 5010919/5011314

Sample Identification

PAM-1(01/08/15)
PAM-1D(01/08/15)
PAM-2(01/08/15)
PAM-3(01/08/15)
PAM-4(01/08/15)
PAM-21(01/08/15)
PAM-31(01/08/15)
OAM 1(01/09/15)
PAM-1(01/09/15)
PAM-1D(01/09/15)
PAM-2(01/09/15)
PAM-3(01/09/15)
PAM-4(01/09/15)
PAM-21(01/09/15)
PAM-31(01/09/15)
PAM-1(01/08/15)DUP
PAM-1D(01/08/15)DUP
PAM-1(01/09/15)DUP
PAM-1D(01/09/15)DUP

The date was appended to the sample ID to differentiate between samples.

Introduction

This data review covers 19 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.
- 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. Continuing Calibration

Continuing calibration 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(1/08/15) and PAM-31(1/09/15) were identified as trip blanks. No hexavalent chromium was found.

Samples PAM-21(1/08/15) and PAM-21(1/09/15) were identified as field blanks. No hexavalent chromium was found.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) 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(01/08/15) and PAM-1D(01/08/15) and samples PAM-1(1/09/15) and PAM-1D(1/09/15) 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(01/08/15)	PAM-1D(01/08/15)			
Hexavalent chromium	0.0207	0.0232	11 (≤20)	-	-

Analyte	Concentration (ng/m ³)		RPD (Limits)	Flags	A or P
	PAM-1(1/09/15)	PAM-1D(1/09/15)			
Hexavalent chromium	0.0358	0.0417	15 (≤20)	-	-

**Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Data Qualification Summary - SDG 5010919/5011314**

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

**Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG
5010919/5011314**

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
5010919/5011314**

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

LDC #: 33590A6

VALIDATION COMPLETENESS WORKSHEET

Date: 01/27/15

SDG #: 5010919/5011314

Level IV

Page: 1 of 2

Laboratory: Eastern Research Group

Reviewer: JD

2nd Reviewer: a

METHOD: (Analyte) 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.	Sample receipt/Technical holding times	A	01/08-09/15
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	A	
V	Field blanks	ND	EB=(6)(14) TB=(4) SB(7)(15)
VI.	Matrix Spike/Matrix Spike Duplicates	N	Not Required
VII.	Duplicate sample analysis	A	DUP
VIII.	Laboratory control samples	A	LCS/D
IX.	Field duplicates	SW	FD=(1,2)(9,10)
X.	Sample result verification	A	
XI	Overall assessment of data	A	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

SB=Source blank
OTHER:

	Client ID	Lab ID	Matrix	Date
1	PAM-1(01/08/15)	5010919-03	air	01/08/15
2	PAM-1D(01/08/15)	5010919-04	air	01/08/15
3	PAM-2(01/08/15)	5010919-05	air	01/08/15
4	PAM-3(01/08/15)	5010919-06	air	01/08/15
5	PAM-4(01/08/15)	5010919-07	air	01/08/15
6	PAM-21(01/08/15)	5010919-08	air	01/08/15
7	PAM-31(01/08/15)	5010919-09	air	01/08/15
8	OAM 1(01/09/15)	5011314-01	air	01/09/15
9	PAM-1(01/09/15)	5011314-03	air	01/09/15
10	PAM-1D(01/09/15)	5011314-04	air	01/09/15
11	PAM-2(01/09/15)	5011314-05	air	01/09/15
12	PAM-3(01/09/15)	5011314-06	air	01/09/15
13	PAM-4(01/09/15)	5011314-07	air	01/09/15
14	PAM-21(01/09/15)	5011314-08	air	01/09/15
15	PAM-31(01/09/15)	5011314-09	air	01/09/15
16	PAM-1(01/08/15)DUP	5010919-03DUP	air	01/08/15
17	PAM-1D(01/08/15)DUP	5010919-04DUP	air	01/08/15

LDC #: 33590A6

VALIDATION COMPLETENESS WORKSHEET

Date: 1/27/15

SDG #: 5010919/5011314

Level IV

Page: 2 of 2

Laboratory: Eastern Research Group

Reviewer: SO

2nd Reviewer: [Signature]

METHOD: (Analyte) Hexavalent Chromium (ASTM D7614)

	Client ID	Lab ID	Matrix	Date
18	PAM-1(01/09/15)DUP	5011314-03DUP	air	01/09/15
19	PAM-1D(01/09/15)DUP	5011314-04DUP	air	01/09/15
20				
21				
22				
23				
24				

Notes: _____

Method: Inorganics (EPA Method See Lower)

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% QC limits? <u>85-115</u>	/			
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 $\leq \text{CRDL} (\leq 2X \text{ CRDL for soil})$ was used for samples that were $\leq 5X$ 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?			/	

VALIDATION FINDINGS CHECKLIST

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

Inorganics: Method See Cover

Analyte	Concentration (ng/m3)		RPD (≤20)	Qual.
	1	2		
Hexavalent Chromium	0.0207	0.0232	11	

Analyte	Concentration (ng/m3)		RPD (≤20)	Qual.
	9	10		
Hexavalent Chromium	0.0358	0.0417	15	

LDC #: 33590A0

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

Page: 1 of 1

Reviewer: SD

2nd Reviewer: 9

Method: Inorganics, Method See Cover

The correlation coefficient (r) for the calibration of Cr⁺⁶ was recalculated. Calibration date: 01/14/15

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. (ng/ml)	Area	Recalculated	Reported	Acceptable (Y/N)
					r or r ²	r or r ²	
Initial calibration	<u>Cr⁺⁶</u>	s1	0.05	0.0000134	0.99995	0.99995	Y
		s2	0.1	0.0000339			
		s3	0.2	0.0000782			
		s4	0.5	0.0002038			
		s5	1	0.0004016			
		s6	2	0.00082			
ICV 11:14 Calibration verification	<u>Cr⁺⁶</u>	<u>Found</u> 0.5083 ng/ml	<u>True</u> 0.5 ng/ml		101.7%R	101.7%R	↓
CCV 12:14 Calibration verification	<u>Cr⁺⁶</u>	0.5345 ng/ml	0.5 ng/ml		106.9%R	106.9%R	
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 #: 33590A6

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

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

METHOD: Inorganics, Method See Cert

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 11:44	Laboratory control sample	Cr ⁺⁶	1.13 ng/ml	1.00 ng/ml	113%R	113%R	Y
N	Matrix spike sample		(SSR-SR)				
DUP 12:44	Duplicate sample	Cr ⁺⁶	0.0243 ng/ml ³	0.0206 ng/ml ³	16.5%RPD	16.4%RPD	Y*

Comments: *Rounding

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 (9) Cr⁺⁶ reported with a positive detect were recalculated and verified using the following equation:

Concentration = $(A - C_0) / C_1$
 $A = 0.0000252$
 $C_0 = -6.14E-06$
 $C_1 = 0.000424$

$V_f = 10 \text{ ml}$
 $m^3 = 21.22$

Recalculation: $\frac{(0.0000252 - (-6.14E-06))}{0.000424} = 0.07599 \text{ ng/ml}$

$\frac{(\text{ng/ml})(V_f)}{m^3} = \text{ng/m}^3$
 $\frac{(0.07599 \text{ ng/ml})(10 \text{ ml})}{21.22 \text{ m}^3} = 0.0358 \text{ ng/m}^3$

#	Sample ID	Analyte	Reported Concentration (ng/m ³)	Calculated Concentration (ng/m ³)	Acceptable (Y/N)
	1	Cr ⁺⁶	0.0207	0.0206	Y*
	2		0.0232	0.0232	Y
	3		0.0148	0.0148	↓
	4		0.0124	0.0124	↓
	5		0.0195	0.0195	↓
	6		ND	ND	↓
	7		ND	ND	↓
	8		0.0120	0.0119	Y*
	9		0.0358	0.0358	Y
	10		0.0417	0.0416	Y*
	11		0.0295	0.0295	Y
	12		0.0137	0.0138	Y*
	13		0.0558	0.0558	Y
	14		ND	ND	↓
	15		ND	ND	↓

Note: *Rounding



CERTIFICATE OF ANALYSIS

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FILE #: 3926.00

REPORTED: 01/16/15 13:42

SUBMITTED: 01/09/15 to 01/13/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-1	Lab ID: 5010919-03	Sampled: 01/08/15 16:35
Matrix: Air	Sample Volume: 21.69 m ³	Received: 01/09/15 11:47
Comments: Col 1 Start Time 1/7/15 16:29		Analysis Date: 01/14/15 12:34

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0207		0.0036

JAN 28 2015

Initials: *CR*



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AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-1D	Lab ID: 5010919-04	Sampled: 01/08/15 16:39
Matrix: Air	Sample Volume: 21.72 m ³	Received: 01/09/15 11:47
Comments: Col 2 Start Time 1/7/15 16:31		Analysis Date: 01/14/15 12:54

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0232		0.0036

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AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-2	Lab ID: 5010919-05	Sampled: 01/08/15 16:13
Matrix: Air	Sample Volume: 21.63 m ³	Received: 01/09/15 11:47
Comments: Start Time 1/7/15 16:11		Analysis Date: 01/14/15 14:33

Hexavalent Chromium by SOP ERG-MOR-063

<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

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AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-3

Lab ID: 5010919-06

Sampled: 01/08/15 16:01

Matrix: Air

Sample Volume: 21.67 m³

Received: 01/09/15 11:47

Comments: Start Time 1/7/15 15:56

Analysis Date: 01/14/15 14:43

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0124		0.0036

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SUBMITTED: 01/09/15 to 01/13/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-4	Lab ID: 5010919-07	Sampled: 01/08/15 15:44
Matrix: Air	Sample Volume: 21.7 m ³	Received: 01/09/15 11:47
Comments: Start Time 1/7/15 15:37		Analysis Date: 01/14/15 14:53

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0195		0.0036

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Initials: *ER*

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REPORTED: 01/16/15 13:42

SUBMITTED: 01/09/15 to 01/13/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-21	Lab ID: 5010919-08	Sampled: 01/08/15 00:00
Matrix: Air	Sample Volume: 21.63 m ³	Received: 01/09/15 11:47
Comments:		Analysis Date: 01/14/15 15:03

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 28 2015

Initials: ER



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REPORTED: 01/16/15 13:42

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AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-31	Lab ID: 5010919-09	Sampled: 01/08/15 00:00
Matrix: Air	Sample Volume: 21.67 m ³	Received: 01/09/15 11:47
Comments:		Analysis Date: 01/14/15 15:13

Hexavalent Chromium by SOP ERG-MOR-063

<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

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Initials: *CR*



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SUBMITTED: 01/09/15 to 01/13/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: OAM 1	Lab ID: 5011314-01	Sampled: 01/09/15 14:28
Matrix: Air	Sample Volume: 21.21 m ³	Received: 01/13/15 11:05
Comments: Start Time 1/8/15 14:54		Analysis Date: 01/14/15 16:42

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0120		0.0036

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SUBMITTED: 01/09/15 to 01/13/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1	Lab ID: 5011314-03	Sampled: 01/09/15 16:13
Matrix: Air	Sample Volume: 21.22 m ³	Received: 01/13/15 11:05
Comments: Col 1 Start Time 1/8/15 16:38		Analysis Date: 01/14/15 16:53

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0358		0.0036

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REPORTED: 01/16/15 13:42

SUBMITTED: 01/09/15 to 01/13/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-1D	Lab ID: 5011314-04	Sampled: 01/09/15 16:18
Matrix: Air	Sample Volume: 21.22 m ³	Received: 01/13/15 11:05
Comments: Col 2 Start Time 1/8/15 16:43		Analysis Date: 01/14/15 17:13

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0417		0.0036

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REPORTED: 01/16/15 13:42

SUBMITTED: 01/09/15 to 01/13/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-2	Lab ID: 5011314-05	Sampled: 01/09/15 15:53
Matrix: Air	Sample Volume: 21.25 m ³	Received: 01/13/15 11:05
Comments: Start Time 1/8/15 16:16		Analysis Date: 01/14/15 15:33

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0295		0.0036

JAN 28 2015

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FILE #: 3926.00

REPORTED: 01/16/15 13:42

SUBMITTED: 01/09/15 to 01/13/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-3	Lab ID: 5011314-06	Sampled: 01/09/15 15:37
Matrix: Air	Sample Volume: 21.19 m ³	Received: 01/13/15 11:05
Comments: Start Time 1/8/15 16:04		Analysis Date: 01/14/15 15:43

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0137		0.0036

JAN 28 2015

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FILE #: 3926.00

REPORTED: 01/16/15 13:42

SUBMITTED: 01/09/15 to 01/13/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-4	Lab ID: 5011314-07	Sampled: 01/09/15 15:18
Matrix: Air	Sample Volume: 21.15 m ³	Received: 01/13/15 11:05
Comments: Start Time 1/8/15 15:48		Analysis Date: 01/14/15 15:53

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0558		0.0036

JAN 28 2015

Initials: CR

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FILE #: 3926.00

REPORTED: 01/16/15 13:42

SUBMITTED: 01/09/15 to 01/13/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-21

Lab ID: 5011314-08

Sampled: 01/09/15 00:00

Matrix: Air

Sample Volume: 21.25 m³

Received: 01/13/15 11:05

Comments:

Analysis Date: 01/14/15 16:03

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 28 2015

Initials: *CR*



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FILE #: 3926.00

REPORTED: 01/16/15 13:42

SUBMITTED: 01/09/15 to 01/13/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-31	Lab ID: 5011314-09	Sampled: 01/09/15 00:00
Matrix: Air	Sample Volume: 21.19 m ³	Received: 01/13/15 11:05
Comments:		Analysis Date: 01/14/15 16:32

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 28 2015

Initials: *CR*

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Harbor Point, MD, Hexavalent Chromium Monitoring
Collection Date: January 19 through January 20, 2015
LDC Report Date: January 28, 2015
Matrix: Air
Parameters: Hexavalent Chromium
Validation Level: EPA Level IV
Laboratory: Eastern Research Group
Sample Delivery Group (SDG): 5012023/5012118

Sample Identification

OAM 1(1/19/15)	PAM-1(1/20/15)DUP
OAM 2(1/19/15)	PAM-1D (1/20/15)DUP
PAM-1(1/19/15)	
PAM-1D (1/19/15)	
PAM-2(1/19/15)	
PAM-3(1/19/15)	
PAM-4(1/19/15)	
PAM-21(1/19/15)	
PAM-31(1/19/15)	
OAM 1(1/20/15)	
OAM 2(1/20/15)	
PAM-1(1/20/15)	
PAM-1D (1/20/15)	
PAM-2(1/20/15)	
PAM-3(1/20/15)	
PAM-4(1/20/15)	
PAM-21(1/20/15)	
PAM-31(1/20/15)	
PAM-1(1/19/15)DUP	
PAM-1D (1/19/15)DUP	

The date was appended to the sample ID to differentiate between samples.

Introduction

This data review covers 22 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.
- 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. Continuing Calibration

Continuing calibration 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(1/19/15) and PAM-31(1/20/15) were identified as trip blanks. No hexavalent chromium was found.

Samples PAM-21(1/19/15) and PAM-21(1/20/15) were identified as field blanks. No hexavalent chromium was found.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analysis was not required by the method.

VI. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results 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(1/19/15) and PAM-1D (1/19/15) and samples PAM-1(1/20/15) and PAM-1D (1/20/15) 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(1/19/15)	PAM-1D (1/19/15)			
Hexavalent chromium	0.0308	0.0254	19 (≤20)	-	-

Analyte	Concentration (ng/m ³)		RPD (Limits)	Flags	A or P
	PAM-1(1/20/15)	PAM-1D (1/20/15)			
Hexavalent chromium	0.115	0.101	13 (≤20)	-	-

**Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Data Qualification Summary - SDG 5012023/5012118**

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

**Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG
5012023/5012118**

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
5012023/5012118**

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

LDC #: 33590B6

VALIDATION COMPLETENESS WORKSHEET

Date: 1/27/15

SDG #: 5012023/5012118

Level IV

Page: 1 of 2

Laboratory: Eastern Research Group

Reviewer: SD

2nd Reviewer: **METHOD: (Analyte) 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.	Sample receipt/Technical holding times	A	1/19-20/15
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	A	
V	Field blanks	ND	FB=(8)(17) TB=(9)(18)
VI.	Matrix Spike/Matrix Spike Duplicates	N	Not Required
VII.	Duplicate sample analysis	A	DUP
VIII.	Laboratory control samples	A	LCSID
IX.	Field duplicates	SW	FD=(3,4) (12,13)
X.	Sample result verification	A	
XI	Overall assessment of data	A	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

SB=Source blank
OTHER:

	Client ID	Lab ID	Matrix	Date
1	OAM 1(01/19/15)	5012023-10	air	01/19/15
2	OAM 2(01/19/15)	5012023-11	air	01/19/15
3	PAM-1(01/19/15)	5012023-12	air	01/19/15
4	PAM-1D(01/19/15)	5012023-13	air	01/19/15
5	PAM-2(01/19/15)	5012023-14	air	01/19/15
6	PAM-3(01/19/15)	5012023-15	air	01/19/15
7	PAM-4(01/19/15)	5012023-16	air	01/19/15
8	PAM-21(01/19/15)	5012023-17	air	01/19/15
9	PAM-31(01/19/15)	5012023-18	air	01/19/15
10	OAM 1(01/20/15)	5012118-01	air	01/20/15
11	OAM 2(01/20/15)	5012118-02	air	01/20/15
12	PAM-1(01/20/15)	5012118-03	air	01/20/15
13	PAM-1D(01/20/15)	5012118-04	air	01/20/15
14	PAM-2(01/20/15)	5012118-05	air	01/20/15
15	PAM-3(01/20/15)	5012118-06	air	01/20/15
16	PAM-4(01/20/15)	5012118-07	air	01/20/15
17	PAM-21(01/20/15)	5012118-08	air	01/20/15

LDC #: 33590B6

VALIDATION COMPLETENESS WORKSHEET

Date: 1/27/15

SDG #: 5012023/5012118

Level IV

Page: 2 of 2

Laboratory: Eastern Research Group

Reviewer: SD

2nd Reviewer: [Signature]

METHOD: (Analyte) Hexavalent Chromium (ASTM D7614)

	Client ID	Lab ID	Matrix	Date
18	PAM-31(01/20/15)	5012118-09	air	01/20/15
19	PAM-1(01/19/15)DUP	5012023-12DUP	air	01/19/15
20	PAM-1D(01/19/15)DUP	5012023-13DUP	air	01/19/15
21	PAM-1(01/20/15)DUP	5012118-03DUP	air	01/20/15
22	PAM-1D(01/20/15)DUP	5012118-04DUP	air	01/20/15
23				
24				
25				
26				
27				

Notes: _____

Method: Inorganics (EPA Method See Cover)

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% QC limits? <u>85-115</u>	/			
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 FINDINGS CHECKLIST

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.		/		

LDC# 33590B6

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: JD
2nd Reviewer: ea

Inorganics: Method See Cover

Analyte	Concentration (ng/m3)		RPD (≤ 20)	Qual.
	3	4		
Hexavalent Chromium	0.0308	0.0254	19	

Analyte	Concentration (ng/m3)		RPD (≤ 20)	Qual.
	12	13		
Hexavalent Chromium	0.115	0.101	13	

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LDC #: 335910B10

Validation Findings Worksheet
Initial and Continuing Calibration Calculation Verification

Page: 1 of 1
 Reviewer: JD
 2nd Reviewer: R

Method: Inorganics, Method See Cover

The correlation coefficient (r) for the calibration of C⁴⁶ was recalculated. Calibration date: 1/22/15

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. (ng/ml)	Area	Recalculated	Reported	Acceptable (Y/N)
					r or r ²	r or r ²	
Initial calibration	C ⁴⁶	s1	0.05	0.0000135	0.99999	0.99999	Y
		s2	0.1	0.0000317			
		s3	0.2	0.0000763			
		s4	0.5	0.0002078			
		s5	1	0.0004309			
		s6	2	0.0008726			
ICV 10:45 Calibration verification	C ⁴⁶	<u>Found</u> 0.5246 ng/ml	<u>True</u> 0.5 ng/ml		104.9%R	104.9%R	↓
CCV 11:45 Calibration verification	C ⁴⁶	0.5291 ng/ml	0.5 ng/ml		105.8%R	105.8%R	↓
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 #: 33590810

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: JD
2nd Reviewer: E

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 11:15	Laboratory control sample	Cr ⁺⁶	1.10 ng/ml	1.00 ng/ml	110%R	110%R	Y
N	Matrix spike sample		(SSR-SR)				
DUP 12:14	Duplicate sample	Cr ⁺⁶	0.0299 ng/ml ³	0.0309 ng/ml ³	3.29%RPD	3.09%RPD	YX

Comments: * Rounding

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

METHOD: Inorganics, Method See lower

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 (13) Cr⁺⁶ reported with a positive detect were recalculated and verified using the following equation:

Concentration = $(A - C_0) / C_1$ $V_f = 10 \text{ ml}$ Recalculation: $\frac{(0.0000852 - (-1.14E-05))}{0.0004419} = 0.2186 \text{ ng/ml}$
 $M^3 = 21.59$
 $A = 0.0000852$ $\frac{(\text{ng/ml})(\text{ml})}{\text{m}^3} = \text{ng/m}^3$ $\frac{(0.2186 \text{ ng/ml})(10 \text{ ml})}{21.59 \text{ m}^3} = 0.101 \text{ ng/m}^3$
 $C_0 = -1.14E-05$
 $C_1 = 0.0004419$

#	Sample ID	Analyte	Reported Concentration (ng/m ³)	Calculated Concentration (ng/m ³)	Acceptable (Y/N)
	1	Cr ⁺⁶	0.0252	0.0252	Y
	2		ND	ND	↓
	3		0.0308	0.0309	Y*
	4		0.0254	0.0255	Y*
	5		0.0215	0.0216	Y*
	6		ND	ND	Y
	7		0.0568	0.0568	↓
	8		ND	ND	↓
	9		ND	ND	↓
	10		0.0661	0.0661	↓
	11		0.0623	0.0623	↓
	12		0.115	0.115	↓
	13		0.101	0.101	↓
	14		0.105	0.105	↓
	15		0.0909	0.0910	Y*
	16		0.0978	0.0978	Y
	17		ND	ND	↓
	18		ND	ND	↓

Note: *Rounding



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FILE #: 3926.00

REPORTED: 01/27/15 10:12

SUBMITTED: 01/20/15 to 01/21/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: OAM 1	Lab ID: 5012023-10	Sampled: 01/19/15 14:44
Matrix: Air	Sample Volume: 21.39 m ³	Received: 01/20/15 11:32
Comments: Start Time 1/18/15 14:58		Analysis Date: 01/22/15 13:26

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0252		0.0036

JAN 28 2015

Initials: *ER*



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AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: OAM 2	Lab ID: 5012023-11	Sampled: 01/19/15 15:08
Matrix: Air	Sample Volume: 21.39 m ³	Received: 01/20/15 11:32
Comments: Start Time 1/18/15 15:21		Analysis Date: 01/22/15 13:36

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 28 2015

Initials: ER



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AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1	Lab ID: 5012023-12	Sampled: 01/19/15 16:04
Matrix: Air	Sample Volume: 21.34 m ³	Received: 01/20/15 11:32
Comments: Col 1 Start Time 1/18/15 16:21		Analysis Date: 01/22/15 12:06

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0308		0.0036

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AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-1D	Lab ID: 5012023-13	Sampled: 01/19/15 16:07
Matrix: Air	Sample Volume: 21.34 m ³	Received: 01/20/15 11:32
Comments: Col 2 Start Time 1/18/15 16:25		Analysis Date: 01/22/15 12:26

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0254		0.0036

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AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-2

Lab ID: 5012023-14

Sampled: 01/19/15 15:53

Matrix: Air

Sample Volume: 21.62 m³

Received: 01/20/15 11:32

Comments: Start Time 1/18/15 16:00

Analysis Date: 01/22/15 14:05

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0215		0.0036

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Initials: ER



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SUBMITTED: 01/20/15 to 01/21/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-3	Lab ID: 5012023-15	Sampled: 01/19/15 15:35
Matrix: Air	Sample Volume: 21.38 m ³	Received: 01/20/15 11:32
Comments: Start Time 1/18/15 15:50		Analysis Date: 01/22/15 14:15

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 28 2015

Initials: *CR*



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SUBMITTED: 01/20/15 to 01/21/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-4	Lab ID: 5012023-16	Sampled: 01/19/15 15:26
Matrix: Air	Sample Volume: 21.39 m ³	Received: 01/20/15 11:32
Comments: Start Time 1/18/15 15:40		Analysis Date: 01/22/15 14:25

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0568		0.0036

JAN 28 2015

Initials: *ER*



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REPORTED: 01/27/15 10:12

SUBMITTED: 01/20/15 to 01/21/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-21

Lab ID: 5012023-17

Sampled: 01/19/15 00:00

Matrix: Air

Sample Volume: 21.62 m³

Received: 01/20/15 11:32

Comments:

Analysis Date: 01/22/15 14:35

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 28 2015

Initials: *CR*



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FILE #: 3926.00

REPORTED: 01/27/15 10:12

SUBMITTED: 01/20/15 to 01/21/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-31

Lab ID: 5012023-18

Sampled: 01/19/15 00:00

Matrix: Air

Sample Volume: 21.38 m³

Received: 01/20/15 11:32

Comments:

Analysis Date: 01/22/15 14:45

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 28 2015

Initials: *CR*



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FILE #: 3926.00

REPORTED: 01/27/15 10:12

SUBMITTED: 01/20/15 to 01/21/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: OAM 1	Lab ID: 5012118-01	Sampled: 01/20/15 14:57
Matrix: Air	Sample Volume: 21.75 m ³	Received: 01/21/15 10:46
Comments: Start Time 1/19/15 14:47		Analysis Date: 01/22/15 14:55

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0661		0.0036

JAN 28 2015

Initials: ER



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: 01/27/15 10:12

SUBMITTED: 01/20/15 to 01/21/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: OAM 2	Lab ID: 5012118-02	Sampled: 01/20/15 15:22
Matrix: Air	Sample Volume: 21.78 m ³	Received: 01/21/15 10:46
Comments: Start Time 1/19/15 15:10		Analysis Date: 01/22/15 15:05

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0623		0.0036

JAN 28 2015

Initials: *CR*



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FILE #: 3926.00

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SUBMITTED: 01/20/15 to 01/21/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1	Lab ID: 5012118-03	Sampled: 01/20/15 16:06
Matrix: Air	Sample Volume: 21.58 m ³	Received: 01/21/15 10:46
Comments: Col 1 Start Time 1/19/15 16:07		Analysis Date: 01/22/15 12:45

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.115		0.0036

JAN 28 2015

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AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-1D

Lab ID: 5012118-04

Sampled: 01/20/15 16:09

Matrix: Air

Sample Volume: 21.59 m³

Received: 01/21/15 10:46

Comments: Col 2 Start Time 1/19/15 16:10

Analysis Date: 01/22/15 13:05

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.101		0.0036

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FILE #: 3926.00

REPORTED: 01/27/15 10:12

SUBMITTED: 01/20/15 to 01/21/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-2	Lab ID: 5012118-05	Sampled: 01/20/15 15:56
Matrix: Air	Sample Volume: 21.6 m ³	Received: 01/21/15 10:46
Comments: Start Time 1/19/15 15:56		Analysis Date: 01/22/15 15:15

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.105		0.0036

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FILE #: 3926.00

REPORTED: 01/27/15 10:12

SUBMITTED: 01/20/15 to 01/21/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-3	Lab ID: 5012118-06	Sampled: 01/20/15 15:49
Matrix: Air	Sample Volume: 21.76 m ³	Received: 01/21/15 10:46
Comments: Start Time 1/19/15 15:38		Analysis Date: 01/22/15 15:25

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0909		0.0036

JAN 28 2015

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FILE #: 3926.00

REPORTED: 01/27/15 10:12

SUBMITTED: 01/20/15 to 01/21/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-4	Lab ID: 5012118-07	Sampled: 01/20/15 15:44
Matrix: Air	Sample Volume: 21.83 m ³	Received: 01/21/15 10:46
Comments: Start Time 1/19/15 15:29		Analysis Date: 01/22/15 15:35

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0978		0.0036

JAN 28 2015

Initials: ER



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FILE #: 3926.00

REPORTED: 01/27/15 10:12

SUBMITTED: 01/20/15 to 01/21/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-21	Lab ID: 5012118-08	Sampled: 01/20/15 00:00
Matrix: Air	Sample Volume: 21.6 m ³	Received: 01/21/15 10:46
Comments:		Analysis Date: 01/22/15 16:04

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 28 2015

Initials: *CR*



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FILE #: 3926.00

REPORTED: 01/27/15 10:12

SUBMITTED: 01/20/15 to 01/21/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-31	Lab ID: 5012118-09	Sampled: 01/20/15 00:00
Matrix: Air	Sample Volume: 21.76 m ³	Received: 01/21/15 10:46
Comments:		Analysis Date: 01/22/15 16:14

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 28 2015

Initials: ER



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

January 22, 2015

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

Dear Mr. Boggs,

Enclosed is the final validation report for the fraction listed below. This SDG was received on January 20, 2015. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #33533:

SDG

Fraction

5011314

Hexavalent Chromium

The data validation was performed under EPA Level IV guidelines. The analyses were validated using the following documents, as applicable to each method:

- Air Monitoring Program Quality Assurance Project Plan, Area 1, Phase 1 Development, Version 1, Baltimore Works Site, Baltimore, Maryland, March 2014
- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, January 2010

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: January 10 through January 12, 2015
LDC Report Date: January 21, 2015
Matrix: Air
Parameters: Hexavalent Chromium
Validation Level: EPA Level IV
Laboratory: Eastern Research Group
Sample Delivery Group (SDG): 5011314

Sample Identification

OAM 1(01/10/15)
OAM 2(01/10/15)
PAM-1(01/10/15)
PAM-1D(01/10/15)
PAM-2(01/10/15)
PAM-3(01/10/15)
PAM-4(01/10/15)
PAM-21(01/10/15)
PAM-31(01/10/15)
OAM 2(01/12/15)
PAM-1(01/12/15)
PAM-1D(01/12/15)
PAM-3(01/12/15)
PAM-4(01/12/15)
PAM-21(01/12/15)
PAM-31(01/12/15)
PAM-1(01/10/15)DUP
PAM-1D(01/10/15)DUP
PAM-1(01/12/15)DUP
PAM-1D(01/12/15)DUP

The date was appended to the sample ID to differentiate between samples.

Introduction

This data review covers 20 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. Continuing Calibration

Continuing calibration 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(01/10/15) and PAM-31(01/12/15) were identified as trip blanks. No hexavalent chromium was found.

Samples PAM-21(01/10/15) and PAM-21(01/12/15) were identified as field blanks. No hexavalent chromium was found.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analysis was not required by the method.

VI. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results 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(01/10/15) and PAM-1D(01/10/15) and samples PAM-1(01/12/15) and PAM-1D(01/12/15) 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 (01/10/15)	PAM-1D (01/10/15)			
Hexavalent chromium	0.0214	0.0225	5 (≤20)	-	-

Analyte	Concentration (ng/m ³)		RPD (Limits)	Flags	A or P
	PAM-1 (01/12/15)	PAM-1D (01/12/15)			
Hexavalent chromium	0.0980	0.0842	15 (≤20)	-	-

**Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Data Qualification Summary - SDG 5011314**

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

**Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG
5011314**

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 5011314**

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

LDC #: 33533A6
 SDG #: 5011314
 Laboratory: Eastern Research Group

VALIDATION COMPLETENESS WORKSHEET
 Level IV

Date: 1/21/15
 Page: 1 of 1
 Reviewer: SD
 2nd Reviewer: OL

METHOD: (Analyte) 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.	Sample receipt/Technical holding times	A	1/10-12/15
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	A	
V	Field blanks	ND	FB=(8)(15) TB=(9)(16)
VI.	Matrix Spike/Matrix Spike Duplicates	N	Not Required
VII.	Duplicate sample analysis	A	DUP
VIII.	Laboratory control samples	A	LCS/D
IX.	Field duplicates	SW	FD=(3,4)(11,12)
X.	Sample result verification	A	
XI.	Overall assessment of data	A	

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

	Client ID	Lab ID	Matrix	Date
1	OAM 1(01/10/15)	5011314-10	air	01/10/15
2	OAM 2(01/10/15)	5011314-11	air	01/10/15
3	PAM-1(01/10/15)	5011314-12	air	01/10/15
4	PAM-1D(01/10/15)	5011314-13	air	01/10/15
5	PAM-2(01/10/15)	5011314-14	air	01/10/15
6	PAM-3(01/10/15)	5011314-15	air	01/10/15
7	PAM-4(01/10/15)	5011314-16	air	01/10/15
8	PAM-21(01/10/15)	5011314-17	air	01/10/15
9	PAM-31(01/10/15)	5011314-18	air	01/10/15
10	OAM 2(01/12/15)	5011314-20	air	01/12/15
11	PAM-1(01/12/15)	5011314-21	air	01/12/15
12	PAM-1D(01/12/15)	5011314-22	air	01/12/15
13	PAM-3(01/12/15)	5011314-24	air	01/12/15
14	PAM-4(01/12/15)	5011314-25	air	01/12/15
15	PAM-21(01/12/15)	5011314-26	air	01/12/15
16	PAM-31(01/12/15)	5011314-27	air	01/12/15
17	PAM-1(01/10/15)DUP	5011314-12DUP	air	01/10/15

LDC #: 33533A6

VALIDATION COMPLETENESS WORKSHEET

Date: 1/21/15

SDG #: 5011314

Level IV

Page: 2 of 2

Laboratory: Eastern Research Group

Reviewer: SO

2nd Reviewer: OR

METHOD: (Analyte) Hexavalent Chromium (ASTM D7614)

	Client ID	Lab ID	Matrix	Date
18	PAM-1D(01/10/15)DUP	5011314-13DUP	air	01/10/15
19	PAM-1(01/12/15)DUP	5011314-21DUP	air	01/12/15
20	PAM-1D(01/12/15)DUP	5011314-22DUP	air	01/12/15
21				
22				

Method: Inorganics (EPA Method See Cover)

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 % QC limits? <u>85-115</u>	/			
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.			/	
<u>MS</u> 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?			/	

VALIDATION FINDINGS CHECKLIST

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.		/		

LDC# 33533A6

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1

Reviewer: SD

2nd Reviewer: Q

Inorganics: Method See Cover

Analyte	Concentration (ng/m3)		RPD (≤ 20)	Qual.
	3	4		
Hexavalent Chromium	0.0214	0.0225	5	

Analyte	Concentration (ng/m3)		RPD (≤ 20)	Qual.
	11	12		
Hexavalent Chromium	0.0980	0.0842	15	

\\LDCFILESERVER\Validation\FIELD DUPLICATES\FD_inorganic\33533A6.wpd

LDC #: 33533A6

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

Page: 1 of 1
 Reviewer: SD
 2nd Reviewer: Q

Method: Inorganics, Method See Cover

The correlation coefficient (r) for the calibration of Cr⁺⁶ was recalculated. Calibration date: 01/15/15

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. (ng/ml)	Area	Recalculated	Reported	Acceptable (Y/N)
					r or r ²	r or r ²	
Initial calibration	Cr ⁺⁶	s1	0.05	0.0000142	0.99952	0.99952	Y
		s2	0.1	0.0000353			
		s3	0.2	0.0000776			
		s4	0.5	0.0002054			
		s5	1	0.000397			
		s6	2	0.0008528			
ICV 11:23 Calibration verification	Cr ⁺⁶	<u>Found</u> 0.5203ng/ml	<u>True</u> 0.5ng/ml		104.1%R	104.0%R	Y*
CCV 12:23 Calibration verification	Cr ⁺⁶	0.5074ng/ml	0.5ng/ml		101.5%R	101.5%R	Y
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.

*Rounding

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

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	
<u>LC5</u> <u>11:53</u>	Laboratory control sample	<u>Cr⁺⁶</u>	<u>1.027 ng/ml</u>	<u>1.00 ng/ml</u>	<u>103%R</u>	<u>103%R</u>	<u>Y</u>
	Matrix spike sample		(SSR-SR)				
<u>DUP</u> <u>12:53</u>	Duplicate sample	<u>Cr⁺⁶</u>	<u>0.0256 ng/m³</u>	<u>0.0214 ng/m³</u>	<u>17.9%RPD</u>	<u>17.9%RPD</u>	<u>Y</u>

Comments: _____

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 (5) Cr⁺⁶ reported with a positive detect were recalculated and verified using the following equation:

Concentration = $(A - C_0) \cdot C_1 \cdot \frac{V_f \cdot 10 \text{ ml}}{m^3} = \text{ng/m}^3$ Recalculation: $\frac{(0.0000019 - (-1.04E-05))}{0.0004271} = 0.289 \text{ ng/ml}$

$A = 0.0000019$
 $C_0 = -1.04E-05$
 $C_1 = 0.0004271$

$\frac{(0.289 \text{ ng/ml}) \cdot (10 \text{ ml})}{21.8 \text{ m}^3} = 0.0132 \text{ ng/m}^3$

#	Sample ID	Analyte	Reported Concentration (ng/m ³)	Calculated Concentration (ng/m ³)	Acceptable (Y/N)
	1	Cr ⁺⁶	ND	ND	Y
	2		ND	ND	Y
	3		0.0214	0.0214	Y
	4		0.0225	0.0226	Y*
	5		0.0132	0.0132	Y
	6		ND	ND	
	7		0.0322	0.0322	
	8		ND	ND	
	9		ND	ND	
	10		0.261	0.261	Y
	11		0.0980	0.0980	Y
	12		0.0842	0.0843	Y*
	13		0.0850	0.0850	Y
	14		0.0792	0.0793	Y*
	15		ND	ND	Y
	16		ND	ND	Y

Note: *Rounding



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ATTN: Mr. Jeff Boggs

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FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/20/15 15:16

SUBMITTED: 01/13/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: OAM 1

Lab ID: 5011314-10

Sampled: 01/10/15 14:43

Matrix: Air

Sample Volume: 21.76 m³

Received: 01/13/15 11:05

Comments: Start Time 1/9/15 14:32

Analysis Date: 01/15/15 14:04

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 22 2015

Initials: *ER*

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: 01/20/15 15:16

SUBMITTED: 01/13/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: OAM 2

Lab ID: 5011314-11

Sampled: 01/10/15 15:05

Matrix: Air

Sample Volume: 21.72 m³

Received: 01/13/15 11:05

Comments: Start Time 1/9/15 14:58

Analysis Date: 01/15/15 14:14

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 22 2015

Initials: *CR*

Eastern Research Group

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FILE #: 3926.00

REPORTED: 01/20/15 15:16

SUBMITTED: 01/13/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-1

Lab ID: 5011314-12

Sampled: 01/10/15 16:37

Matrix: Air

Sample Volume: 21.88 m³

Received: 01/13/15 11:05

Comments: Col 1 Start Time 1/9/15 16:18

Analysis Date: 01/15/15 12:43

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0214		0.0036

JAN 22 2015

Initials: *ER*

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FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/20/15 15:16

SUBMITTED: 01/13/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-1D	Lab ID: 5011314-13	Sampled: 01/10/15 16:39
Matrix: Air	Sample Volume: 21.86 m ³	Received: 01/13/15 11:05
Comments: Col 2 Start Time 1/9/15 16:22		Analysis Date: 01/15/15 13:03

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0225		0.0036

JAN 22 2015

Initials: *CR*

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FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/20/15 15:16

SUBMITTED: 01/13/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-2

Lab ID: 5011314-14

Sampled: 01/10/15 16:10

Matrix: Air

Sample Volume: 21.8 m³

Received: 01/13/15 11:05

Comments: Start Time 1/9/15 15:57

Analysis Date: 01/15/15 16:42

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0132		0.0036

JAN 22 2015

Initials: *CR*

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ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/20/15 15:16

SUBMITTED: 01/13/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-3

Lab ID: 5011314-15

Sampled: 01/10/15 15:57

Matrix: Air

Sample Volume: 21.84 m³

Received: 01/13/15 11:05

Comments: Start Time 1/9/15 15:41

Analysis Date: 01/15/15 16:52

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 22 2015

Initials: *ER*

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PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/20/15 15:16

SUBMITTED: 01/13/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-4

Lab ID: 5011314-16

Sampled: 01/10/15 15:45

Matrix: Air

Sample Volume: 21.93 m³

Received: 01/13/15 11:05

Comments: Start Time 1/9/15 15:24

Analysis Date: 01/15/15 15:03

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0322		0.0036

JAN 22 2015

Initials: ER

Eastern Research Group

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ATTN: Mr. Jeff Boggs

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FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/20/15 15:16

SUBMITTED: 01/13/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-21

Lab ID: 5011314-17

Sampled: 01/10/15 00:00

Matrix: Air

Sample Volume: 21.8 m³

Received: 01/13/15 11:05

Comments:

Analysis Date: 01/15/15 15:13

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 22 2015

Initials: ER

Eastern Research Group

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ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/20/15 15:16

SUBMITTED: 01/13/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-31

Lab ID: 5011314-18

Sampled: 01/10/15 00:00

Matrix: Air

Sample Volume: 21.84 m³

Received: 01/13/15 11:05

Comments:

Analysis Date: 01/15/15 15:23

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 22 2015

Initials: *ER*

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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: 01/20/15 15:16

SUBMITTED: 01/13/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: OAM 2

Lab ID: 5011314-20

Sampled: 01/12/15 15:21

Matrix: Air

Sample Volume: 21.81 m³

Received: 01/13/15 11:05

Comments: Start Time 1/11/15 15:42

Analysis Date: 01/15/15 15:33

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.261		0.0036

JAN 22 2015

Initials: ER

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FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/20/15 15:16

SUBMITTED: 01/13/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-1

Lab ID: 5011314-21

Sampled: 01/12/15 16:27

Matrix: Air

Sample Volume: 21.55 m³

Received: 01/13/15 11:05

Comments: Col 1 Start Time 1/11/15 16:31

Analysis Date: 01/15/15 13:23

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0980		0.0036

JAN 22 2015

Initials: CR



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FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/20/15 15:16

SUBMITTED: 01/13/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-1D

Lab ID: 5011314-22

Sampled: 01/12/15 16:30

Matrix: Air

Sample Volume: 21.52 m³

Received: 01/13/15 11:05

Comments: Col 2 Start Time 1/11/15 16:35

Analysis Date: 01/15/15 13:43

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0842		0.0036

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FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/20/15 15:16

SUBMITTED: 01/13/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-3

Lab ID: 5011314-24

Sampled: 01/12/15 15:54

Matrix: Air

Sample Volume: 21.4 m³

Received: 01/13/15 11:05

Comments: Start Time 1/11/15 16:07

Analysis Date: 01/15/15 15:43

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0850		0.0036

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Initials: ER

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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: 01/20/15 15:16

SUBMITTED: 01/13/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-4

Lab ID: 5011314-25

Sampled: 01/12/15 15:44

Matrix: Air

Sample Volume: 21.87 m³

Received: 01/13/15 11:05

Comments: Start Time 1/11/15 16:01

Analysis Date: 01/15/15 15:53

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0792		0.0036

JAN 22 2015

Initials: *ER*

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FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/20/15 15:16

SUBMITTED: 01/13/15

AQS SITE

CODE: Honeywell Hex Chrome Study
SITE CODE:

Description: PAM-21	Lab ID: 5011314-26	Sampled: 01/12/15 00:00
Matrix: Air	Sample Volume: 21.4 m ³	Received: 01/13/15 11:05
Comments:		Analysis Date: 01/15/15 16:03

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 22 2015

Initials: ER

Eastern Research Group

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FILE #: 3926.00

REPORTED: 01/20/15 15:16

SUBMITTED: 01/13/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-31

Lab ID: 5011314-27

Sampled: 01/12/15 00:00

Matrix: Air

Sample Volume: 21.4 m³

Received: 01/13/15 11:05

Comments:

Analysis Date: 01/15/15 16:13

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 22 2015

Initials: *CR*

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

January 27, 2015

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

Dear Mr. Boggs,

Enclosed is the final validation report for the fraction listed below. This SDG was received on January 21, 2015. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #33545:

SDG

Fraction

5011436/5011519

Hexavalent Chromium

The data validation was performed under EPA Level IV guidelines. The analyses were validated using the following documents, as applicable to each method:

- Air Monitoring Program Quality Assurance Project Plan, Area 1, Phase 1 Development, Version 1, Baltimore Works Site, Baltimore, Maryland, March 2014
- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, January 2010

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: January 13 through January 14, 2015
LDC Report Date: January 23, 2015
Matrix: Air
Parameters: Hexavalent Chromium
Validation Level: EPA Level IV
Laboratory: Eastern Research Group
Sample Delivery Group (SDG): 5011436/5011519

Sample Identification

OAM 1(01/13/15)	PAM-1(01/14/15)DUP
OAM 2(01/13/15)	PAM-1D (01/14/15)DUP
PAM-1(01/13/15)	
PAM-1D (01/13/15)	
PAM-2(01/13/15)	
PAM-3(01/13/15)	
PAM-4(01/13/15)	
PAM-21(01/13/15)	
PAM-31(01/13/15)	
OAM 1(01/14/15)	
OAM 2(01/14/15)	
PAM-1(01/14/15)	
PAM-1D (01/14/15)	
PAM-2(01/14/15)	
PAM-3(01/14/15)	
PAM-4(01/14/15)	
PAM-21(01/14/15)	
PAM-31(01/14/15)	
PAM-1(01/13/15)DUP	
PAM-1D (01/13/15)DUP	

The date was appended to the sample ID to differentiate between samples.

Introduction

This data review covers 22 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.
- 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. Continuing Calibration

Continuing calibration 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(01/13/15) and PAM-31(01/14/15) were identified as trip blanks. No hexavalent chromium was found.

Samples PAM-21(01/13/15) and PAM-21(01/14/15) were identified as field blanks. No hexavalent chromium was found.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analysis was not required by the method.

VI. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results 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(01/13/15) and PAM-1D (01/13/15) and samples PAM-1(01/14/15) and PAM-1D (01/14/15) 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(01/13/15)	PAM-1D (01/13/15)			
Hexavalent chromium	0.0083	0.0085	2 (≤20)	-	-

Analyte	Concentration (ng/m ³)		RPD (Limits)	Flags	A or P
	PAM-1(01/14/15)	PAM-1D (01/14/15)			
Hexavalent chromium	0.0086	0.0131	41 (≤20)	NQ	-

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

**Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Data Qualification Summary - SDG 5011436/5011519**

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

**Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG
5011436/5011519**

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
5011436/5011519**

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



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Environmental Resources Management, Inc

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ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/21/15 15:33

SUBMITTED: 01/14/15 to 01/15/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: OAM 1

Lab ID: 5011436-01

Sampled: 01/13/15 14:48

Matrix: Air

Sample Volume: 21.4 m³

Received: 01/14/15 13:01

Comments: Start Time 1/12/15 15:01

Analysis Date: 01/20/15 14:47

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0111		0.0036

JAN 26 2015

Initials: *CR*



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ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/21/15 15:33

SUBMITTED: 01/14/15 to 01/15/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: OAM 2

Lab ID: 5011436-02

Sampled: 01/13/15 15:13

Matrix: Air

Sample Volume: 21.42 m³

Received: 01/14/15 13:01

Comments: Start Time 1/12/15 15:25

Analysis Date: 01/20/15 14:57

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 26 2015

Initials: *ER*

Eastern Research Group

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CERTIFICATE OF ANALYSIS

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

FILE #: 3926.00
REPORTED: 01/21/15 15:33
SUBMITTED: 01/14/15 to 01/15/15

ATTN: Mr. Jeff Boggs

AQS SITE
CODE:
SITE CODE: Honeywell Hex Chrome Study

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

Description: PAM-1	Lab ID: 5011436-03	Sampled: 01/13/15 16:15
Matrix: Air	Sample Volume: 21.3 m ³	Received: 01/14/15 13:01
Comments: Col 1 Start Time 1/12/15 16:35		Analysis Date: 01/20/15 12:48

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0083		0.0036

JAN 26 2015

Initials: *ER*



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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: 01/21/15 15:33

SUBMITTED: 01/14/15 to 01/15/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1D	Lab ID: 5011436-04	Sampled: 01/13/15 16:20
Matrix: Air	Sample Volume: 21.33 m ³	Received: 01/14/15 13:01
Comments: Col 2 Start Time 1/12/15 16:38		Analysis Date: 01/20/15 13:08

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0085		0.0036

JAN 26 2015

Initials: *CR*

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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: 01/21/15 15:33

SUBMITTED: 01/14/15 to 01/15/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-2	Lab ID: 5011436-05	Sampled: 01/13/15 16:04
Matrix: Air	Sample Volume: 21.42 m ³	Received: 01/14/15 13:01
Comments: Start Time 1/12/15 16:16		Analysis Date: 01/20/15 15:07

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0500		0.0036

JAN 26 2015

Initials: ER

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: 01/21/15 15:33

SUBMITTED: 01/14/15 to 01/15/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-3	Lab ID: 5011436-06	Sampled: 01/13/15 15:48
Matrix: Air	Sample Volume: 21.44 m ³	Received: 01/14/15 13:01
Comments: Start Time 1/12/15 15:59		Analysis Date: 01/20/15 15:17

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0076		0.0036

JAN 26 2015

Initials: *ER*

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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: 01/21/15 15:33

SUBMITTED: 01/14/15 to 01/15/15

AQS SITE

CODE: Honeywell Hex Chrome Study
SITE CODE:

Description: PAM-4	Lab ID: 5011436-07	Sampled: 01/13/15 15:39
Matrix: Air	Sample Volume: 21.45 m ³	Received: 01/14/15 13:01
Comments: Start Time 1/12/15 15:49		Analysis Date: 01/20/15 15:27

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0100		0.0036

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FILE #: 3926.00

REPORTED: 01/21/15 15:33

SUBMITTED: 01/14/15 to 01/15/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-21

Lab ID: 5011436-08

Sampled: 01/13/15 00:00

Matrix: Air

Sample Volume: 21.42 m³

Received: 01/14/15 13:01

Comments:

Analysis Date: 01/20/15 15:37

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 26 2015

Initials: *CR*

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75 Valley Stream Parkway, Suite 400
Malvern, PA 19355

FILE #: 3926.00
REPORTED: 01/21/15 15:33
SUBMITTED: 01/14/15 to 01/15/15

ATTN: Mr. Jeff Boggs

AQS SITE
CODE:
SITE CODE: Honeywell Hex Chrome Study

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

Description: PAM-31	Lab ID: 5011436-09	Sampled: 01/13/15 00:00
Matrix: Air	Sample Volume: 21.44 m ³	Received: 01/14/15 13:01
Comments:		Analysis Date: 01/20/15 15:47

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 26 2015

Initials: *CR*

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FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/21/15 15:33

SUBMITTED: 01/14/15 to 01/15/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: OAM 1	Lab ID: 5011519-01	Sampled: 01/14/15 15:01
Matrix: Air	Sample Volume: 21.71 m ³	Received: 01/15/15 13:51
Comments: Start Time 1/13/15 14:54		Analysis Date: 01/20/15 15:57

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0123		0.0036

JAN 26 2015

Initials: ER

Eastern Research Group

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Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/21/15 15:33

SUBMITTED: 01/14/15 to 01/15/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: OAM 2	Lab ID: 5011519-02	Sampled: 01/14/15 15:21
Matrix: Air	Sample Volume: 21.67 m ³	Received: 01/15/15 13:51
Comments: Start Time 1/13/15 15:16		Analysis Date: 01/20/15 16:06

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0157		0.0036

JAN 26 2015

Initials: CR

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

FILE #: 3926.00
REPORTED: 01/21/15 15:33
SUBMITTED: 01/14/15 to 01/15/15

ATTN: Mr. Jeff Boggs

AQS SITE
CODE:
SITE CODE: Honeywell Hex Chrome Study

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

Description: PAM-1	Lab ID: 5011519-03	Sampled: 01/14/15 16:12
Matrix: Air	Sample Volume: 21.5 m ³	Received: 01/15/15 13:51
Comments: Col 1 Start Time 1/13/15 16:19		Analysis Date: 01/20/15 13:28

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0086		0.0036

JAN 26 2015

Initials: CR



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Malvern, PA 19355

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

FILE #: 3926.00

REPORTED: 01/21/15 15:33

SUBMITTED: 01/14/15 to 01/15/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1D	Lab ID: 5011519-04	Sampled: 01/14/15 16:16
Matrix: Air	Sample Volume: 21.49 m ³	Received: 01/15/15 13:51
Comments: Col 2 Start Time 1/13/15 16:23		Analysis Date: 01/20/15 13:48

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0131		0.0036

JAN 26 2015

Initials: ER

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FILE #: 3926.00

REPORTED: 01/21/15 15:33

SUBMITTED: 01/14/15 to 01/15/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-2	Lab ID: 5011519-05	Sampled: 01/14/15 15:58
Matrix: Air	Sample Volume: 21.47 m ³	Received: 01/15/15 13:51
Comments: Start Time 1/13/15 16:06		Analysis Date: 01/20/15 17:26

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0445		0.0036

JAN 26 2015

Initials: CR



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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: 01/21/15 15:33

SUBMITTED: 01/14/15 to 01/15/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-3	Lab ID: 5011519-06	Sampled: 01/14/15 15:48
Matrix: Air	Sample Volume: 21.54 m ³	Received: 01/15/15 13:51
Comments: Start Time 1/13/15 15:51		Analysis Date: 01/20/15 17:36

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 26 2015

Initials: *CR*



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

FILE #: 3926.00
REPORTED: 01/21/15 15:33
SUBMITTED: 01/14/15 to 01/15/15

ATTN: Mr. Jeff Boggs

AQS SITE
CODE:
SITE CODE: Honeywell Hex Chrome Study

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

Description: PAM-4	Lab ID: 5011519-07	Sampled: 01/14/15 15:42
Matrix: Air	Sample Volume: 21.6 m ³	Received: 01/15/15 13:51
Comments: Start Time 1/13/15 15:42		Analysis Date: 01/20/15 16:56

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0123		0.0036

JAN 26 2015

Initials: ER

Eastern Research Group

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FILE #: 3926.00

REPORTED: 01/21/15 15:33

SUBMITTED: 01/14/15 to 01/15/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-21

Lab ID: 5011519-08

Sampled: 01/14/15 00:00

Matrix: Air

Sample Volume: 21.47 m³

Received: 01/15/15 13:51

Comments:

Analysis Date: 01/20/15 17:06

Hexavalent Chromium by SOP ERG-MOR-063

<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

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FILE #: 3926.00

REPORTED: 01/21/15 15:33

SUBMITTED: 01/14/15 to 01/15/15

AQS SITE

CODE:

SITE CODE: Honeywell Hex Chrome Study

Description: PAM-31

Lab ID: 5011519-09

Sampled: 01/14/15 00:00

Matrix: Air

Sample Volume: 21.54 m³

Received: 01/15/15 13:51

Comments:

Analysis Date: 01/20/15 17:16

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 26 2015

Initials: *CR*

Eastern Research Group

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LDC #: 33545A6

VALIDATION COMPLETENESS WORKSHEET

Date: 1/2/15

SDG #: 5011436/5011519

Level IV

Page: 1 of 2

Laboratory: Eastern Research Group

Reviewer: JD

2nd Reviewer: CR

METHOD: (Analyte) 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.	Sample receipt/Technical holding times	A	1/13-14/15
II.	Initial calibration	A	
III.	Calibration verification	A	
IV.	Laboratory Blanks	A	
V.	Field blanks	ND	FB=(8)(17) TB=(9)(8)
VI.	Matrix Spike/Matrix Spike Duplicates	N	Not Required
VII.	Duplicate sample analysis	A	DUP = OK by diff
VIII.	Laboratory control samples	A	LCS/D
IX.	Field duplicates	SW	FD=(3,4) (2,13)
X.	Sample result verification	A	
XI.	Overall assessment of data	A	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

SB=Source blank
OTHER:

	Client ID	Lab ID	Matrix	Date
1	OAM 1(01/13/15)	5011436-01	air	01/13/15
2	OAM 2(01/13/15)	5011436-02	air	01/13/15
3	PAM-1(01/13/15)	5011436-03	air	01/13/15
4	PAM-1D(01/13/15)	5011436-04	air	01/13/15
5	PAM-2(01/13/15)	5011436-05	air	01/13/15
6	PAM-3(01/13/15)	5011436-06	air	01/13/15
7	PAM-4(01/13/15)	5011436-07	air	01/13/15
8	PAM-21(01/13/15)	5011436-08	air	01/13/15
9	PAM-31(01/13/15)	5011436-09	air	01/13/15
10	OAM 1(01/14/15)	5011519-01	air	01/14/15
11	OAM 2(01/14/15)	5011519-02	air	01/14/15
12	PAM-1(01/14/15)	5011519-03	air	01/14/15
13	PAM-1D(01/14/15)	5011519-04	air	01/14/15
14	PAM-2(01/14/15)	5011519-05	air	01/14/15
15	PAM-3(01/14/15)	5011519-06	air	01/14/15
16	PAM-4(01/14/15)	5011519-07	air	01/14/15
17	PAM-21(01/14/15)	5011519-08	air	01/14/15

LDC #: 33545A6

VALIDATION COMPLETENESS WORKSHEET

Date: 1/21/15

SDG #: 5011436/5011519

Level IV

Page: 2 of 2

Laboratory: Eastern Research Group

Reviewer: SD

2nd Reviewer: *CR*

METHOD: (Analyte) Hexavalent Chromium (ASTM D7614)

	Client ID	Lab ID	Matrix	Date
18	PAM-31(01/14/15)	5011519-09	air	01/14/15
19	PAM-1(01/13/15)DUP	5011436-03DUP	air	01/13/15
20	PAM-1D(01/13/15)DUP	5011436-04DUP	air	01/13/15
21	PAM-1(01/14/15)DUP	5011519-03DUP	air	01/14/15
22	PAM-1D(01/14/15)DUP	5011519-04DUP	air	01/14/15
23				
24				
25				

Method: Inorganics (EPA Method See below)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Cooler temperature criteria was met.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
II. Calibration				
Were all instruments calibrated daily, each set-up time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the proper number of standards used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all initial calibration correlation coefficients ≥ 0.995 ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all initial and continuing calibration verification %Rs within the 90-110% <u>85-115</u> QC limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were titrant checks performed as required? (Level IV only)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Were balance checks performed as required? (Level IV only)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
III. Blanks				
Was a method blank associated with every sample in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Were the MS/MSD or duplicate relative percent differences (RPD) $\leq 20\%$ for waters <u>Airs</u> 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 $\leq 5\text{X}$ the CRDL.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
V. Laboratory control samples				
Was an LCS analyzed for this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was an LCS analyzed per extraction batch?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Were the performance evaluation (PE) samples within the acceptance limits?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

LDC #: 33815A6

VALIDATION FINDINGS CHECKLIST

Page: 2 of 7
 Reviewer: SD
 2nd Reviewer: CL

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.		/		

LDC# 33545A6

VALIDATION FINDINGS WORKSHEET
Field Duplicates

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

Inorganics: Method See Cover

Analyte	Concentration (ng/m3)		RPD (≤ 20)	Qual.
	3	4		
Hexavalent Chromium	0.0083	0.0085	2	

Analyte	Concentration (ng/m3)		RPD (≤ 20)	Qual.
	12	13		
Hexavalent Chromium	0.0086	0.0131	41	NQ

NQ = No qual because one or both samples <5X MDL

\\LDCFILESERVER\Validation\FIELD DUPLICATES\FD_inorganic\wtemp.WPD

LDC #: 33545A0

Validation Findings Worksheet
Initial and Continuing Calibration Calculation Verification

Page: 1 of 1
 Reviewer: SD
 2nd Reviewer: al

Method: Inorganics, Method See Cover

The correlation coefficient (r) for the calibration of C_{Cr+6} was recalculated. Calibration date: 11/21/15

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. (ng/ml)	Area	Recalculated	Reported	Acceptable (Y/N)
					r or r ²	r or r ²	
Initial calibration	C _{Cr+6}	s1	0.05	0.000025	0.99995	0.99995	Y
		s2	0.1	0.0000445			
		s3	0.2	0.0000843			
		s4	0.5	0.0002205			
		s5	1	0.0004539			
		s6	2	0.0009041			
ICV 11:29 Calibration verification	C _{Cr+6}	<u>Found</u> 0.5003 ng/ml	<u>True</u> 0.5 ng/ml		100.1%R	100.1%R	↓
CCV 12:28 Calibration verification	C _{Cr+6}	0.4970 ng/ml	0.5 ng/ml		99.4%R	99.4%R	
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 #: 33545A10

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: [Signature]
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 11:58	Laboratory control sample	Cr ⁺⁶	1.05 ng/ml	1.00 ng/ml	105%R	105%R	Y
N	Matrix spike sample		(SSR-SR)				
DUP 14:07	Duplicate sample	Cr ⁺⁶	0.0108 ng/l ³	0.0082 ng/l ³	27.4%RPD	27.0%RPD	Y

Comments: _____

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".

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

Compound (analyte) results for (4) Cr⁺⁶ reported with a positive detect were recalculated and verified using the following equation:

Concentration = $(A - C_0) / C_1$
 $A = 0.0000062$
 $C_0 = -2.05E-06$
 $C_1 = 0.0004532$

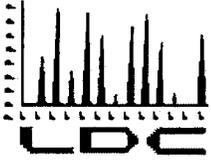
$V_f = 10 \text{ ml}$
 $m^3 = 21.33$

Recalculation: $(0.0000062 - (-2.05E-06)) / 0.0004532 = 0.0182 \text{ ng/L}$

$(\text{ng/L})(V_f) / m^3 = \text{ng/m}^3$
 $(0.0182 \text{ ng/L})(10 \text{ ml}) / 21.33 \text{ m}^3 = 0.0085$

#	Sample ID	Analyte	Reported Concentration (ng/m ³)	Calculated Concentration (ng/m ³)	Acceptable (Y/N)
	1	Cr ⁺⁶	0.0111	0.0111	Y
	2		ND	ND	↓
	3		0.0083	0.0082	Y*
	4		0.0085	0.0085	Y
	5		0.0500	0.0500	↓
	6		0.0076	0.0076	↓
	7		0.0100	0.0100	↓
	8		ND	ND	↓
	9		ND	ND	↓
	10		0.0123	0.0122	Y*
	11		0.0157	0.0157	Y
	12		0.0086	0.0086	↓
	13		0.0131	0.0132	Y*
	14		0.0445	0.0445	Y
	15		ND	ND	Y
	16		0.0123	0.0122	Y*
	17		ND	ND	↓
	18		ND	ND	↓

Note: *Rounding



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

January 28, 2015

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

Dear Mr. Boggs,

Enclosed is the final validation report for the fraction listed below. This SDG was received on January 23, 2015. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #33556:

SDG

5011617/5012023

Fraction

Hexavalent Chromium

The data validation was performed under EPA Level IV guidelines. The analyses were validated using the following documents, as applicable to each method:

- Air Monitoring Program Quality Assurance Project Plan, Area 1, Phase 1 Development, Version 1, Baltimore Works Site, Baltimore, Maryland, March 2014
- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, January 2010

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

Sincerely,

Christina Rink
Project Manager/Chemist

Level IV

LDC #33556 (ERM - Morrisville, NC / Harbor Point, MD, Hexavalent Chromium Monitoring)

LDC	SDG#	DATE REC'D	(3) DATE DUE	Cr(VI) (D7614)		W		S		W		S		W		S		W		S		W		S		W		S		W		S		W		S	
				A	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S		
A	5011617/5012023	01/23/15	01/30/15	18	0																																
Total				A/CR	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	

Shaded cells indicate Level IV validation (all other cells are Level II validation). These sample counts do not include MS/MSD, and DUPs

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Harbor Point, MD, Hexavalent Chromium Monitoring
Collection Date: January 15 through January 16, 2015
LDC Report Date: January 28, 2015
Matrix: Air
Parameters: Hexavalent Chromium
Validation Level: EPA Level IV
Laboratory: Eastern Research Group
Sample Delivery Group (SDG): 5011617/5012023

Sample Identification

OAM 1(1/15/15)	PAM-1(1/16/15)DUP
OAM 2(1/15/15)	PAM-1D (1/16/15)DUP
PAM-1(1/15/15)	
PAM-1D (1/15/15)	
PAM-2(1/15/15)	
PAM-3(1/15/15)	
PAM-4(1/15/15)	
PAM-21(1/15/15)	
PAM-31(1/15/15)	
OAM 1(1/16/15)	
OAM 2(1/16/15)	
PAM-1(1/16/15)	
PAM-1D (1/16/15)	
PAM-2(1/16/15)	
PAM-3(1/16/15)	
PAM-4(1/16/15)	
PAM-21(1/16/15)	
PAM-31(1/16/15)	
PAM-1(1/15/15)DUP	
PAM-1D (1/15/15)DUP	

The date was appended to the sample ID to differentiate between samples.

Introduction

This data review covers 22 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.
- 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. Continuing Calibration

Continuing calibration 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(1/15/15) and PAM-31(1/16/15) were identified as trip blanks. No hexavalent chromium was found.

Samples PAM-21(1/15/15) and PAM-21(1/16/15) were identified as field blanks. No hexavalent chromium was found.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analysis was not required by the method.

VI. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results 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(1/15/15) and PAM-1D (1/15/15) and samples PAM-1(1/16/15) and PAM-1D (1/16/15) 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(1/15/15)	PAM-1D (1/15/15)			
Hexavalent chromium	0.0348	0.0296	16 (≤20)	-	-

Analyte	Concentration (ng/m ³)		RPD (Limits)	Flags	A or P
	PAM-1(1/16/15)	PAM-1D (1/16/15)			
Hexavalent chromium	0.0312	0.0304	3 (≤20)	-	-

**Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Data Qualification Summary - SDG 5011617/5012023**

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

**Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG
5011617/5012023**

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
5011617/5012023**

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

METHOD: (Analyte) 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.	Sample receipt/Technical holding times	A	1/15/15 - 1/26/15
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	A	
V	Field blanks	ND	FB=(8)(17) TB=(9)(18)
VI.	Matrix Spike/Matrix Spike Duplicates	N	Not Required.
VII.	Duplicate sample analysis	A	DUP
VIII.	Laboratory control samples	A	LCS/D
IX.	Field duplicates	SW	FD=(3,4) (12,13)
X.	Sample result verification	A	
XI	Overall assessment of data	A	

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

	Client ID	Lab ID	Matrix	Date
1	OAM 1 (01/15/15)	5011617-01	air	01/15/15
2	OAM 2 (01/15/15)	5011617-02	air	01/15/15
3	PAM-1 (01/15/15)	5011617-03	air	01/15/15
4	PAM-1D (01/15/15)	5011617-04	air	01/15/15
5	PAM-2 (01/15/15)	5011617-05	air	01/15/15
6	PAM-3 (01/15/15)	5011617-06	air	01/15/15
7	PAM-4 (01/15/15)	5011617-07	air	01/15/15
8	PAM-21 (01/15/15)	5011617-08	air	01/15/15
9	PAM-31 (01/15/15)	5011617-09	air	01/15/15
10	OAM 1 (01/16/15)	5012023-01	air	01/16/15
11	OAM 2 (01/16/15)	5012023-02	air	01/16/15
12	PAM-1 (01/16/15)	5012023-03	air	01/16/15
13	PAM-1D (01/16/15)	5012023-04	air	01/16/15
14	PAM-2 (01/16/15)	5012023-05	air	01/16/15
15	PAM-3 (01/16/15)	5012023-06	air	01/16/15
16	PAM-4 (01/16/15)	5012023-07	air	01/16/15
17	PAM-21 (01/16/15)	5012023-08	air	01/16/15

LDC #: 335456A6

VALIDATION COMPLETENESS WORKSHEET

Date: 1/26/15

SDG #: 5011617/5012023

Level IV

Page: 2 of 2

Laboratory: Eastern Research Group

Reviewer: SD

2nd Reviewer: [Signature]

METHOD: (Analyte) Hexavalent Chromium (ASTM D7614)

	Client ID	Lab ID	Matrix	Date
18	PAM-31 (01/16/15)	5012023-09	air	01/16/15
19	PAM-1 (01/15/15)DUP	5011617-03DUP	air	01/15/15
20	PAM-1D (01/15/15)DUP	5011617-04DUP	air	01/15/15
21	PAM-1 (01/16/15)DUP	5012023-03DUP	air	01/16/15
22	PAM-1D (01/16/15)DUP	5012023-04DUP	air	01/16/15
23				
24				
25				

Method: Inorganics (EPA Method See Lab)

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% QC limits? <u>85-115</u>	/			
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.			/	
<u>Wing</u> 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?			/	

VALIDATION FINDINGS CHECKLIST

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

Inorganics: Method See Cover

Analyte	Concentration (ng/m3)		RPD (≤20)	Qual.
	3	4		
Hexavalent Chromium	0.0348	0.0296	16	

Analyte	Concentration (ng/m3)		RPD (≤20)	Qual.
	12	13		
Hexavalent Chromium	0.0312	0.0304	3	

LDC #: 33556A6

Validation Findings Worksheet
Initial and Continuing Calibration Calculation Verification

Page: 1 of 1
 Reviewer: SD
 2nd Reviewer: SZ

Method: Inorganics, Method See Cover

The correlation coefficient (r) for the calibration of Cr⁺⁶ was recalculated. Calibration date: 01/21/15

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. (ng/mL)	Area	Recalculated	Reported	Acceptable (Y/N)
					r or r ²	r or r ²	
Initial calibration	Cr ⁺⁶	s1	0.05	0.0000144	0.99975	0.99974	Y*
		s2	0.1	0.0000392			
		s3	0.2	0.000076			
		s4	0.5	0.0002225			
		s5	1	0.0004291			
		s6	2	0.0009013			
ICV 10:50 Calibration verification	Cr ⁺⁶	<u>Found</u> 0.5017ng/ml	<u>True</u> 0.5ng/ml		100.3%R	100.3%R	Y
CCV 11:49 Calibration verification	Cr ⁺⁶	0.4950ng/ml	0.5ng/ml		99.0%R	99.0%R	↓
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.

*Rounding

LDC #: 33556A6

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: JD
2nd Reviewer: Q

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 11:20	Laboratory control sample	Cr ⁺⁶	1.02 ng/ml	1.00 ng/ml	102%R	102%R	Y
N	Matrix spike sample		(SSR-SR)				
DUP	Duplicate sample	Cr ⁺⁶	0.03765 ng/l ³	0.03469 ng/l ³	8.18%RPD	8.16%RPD	Y*

Comments: *Rounding

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 (13) Cr+6 reported with a positive detect were recalculated and verified using the following equation:

Concentration = $A - C_0 / C_1$ $m^3 = 21.2$ Recalculation: $\frac{(0.000089 - (-1.03E-05))}{0.0004531} = 0.0644 \text{ ng/ml}$
 $A = 0.000089$ $V_f = 10 \text{ ml}$
 $C_0 = -1.03E-05$ $\frac{(\text{ng/ml})(V_f)}{m^3} = \text{ng/m}^3$
 $C_1 = 0.0004531$ $\frac{(0.0644 \text{ ng/ml})(10 \text{ ml})}{21.2 \text{ m}^3} = 0.0304 \text{ ng/m}^3$

#	Sample ID	Analyte	Reported Concentration (ng/m ³)	Calculated Concentration (ng/m ³)	Acceptable (Y/N)
	1	Cr+6	0.0264	0.0263	Y
	2		0.0254	0.0254	↓
	3		0.0348	0.0347	Y*
	4		0.0296	0.0295	Y*
	5		0.0412	0.0411	Y*
	6		0.0234	0.0234	Y
	7		0.0384	0.0383	Y*
	8		ND	ND	Y
	9		ND	ND	↓
	10		0.0209	0.0209	↓
	11		0.0194	0.0193	Y*
	12		0.0312	0.0312	Y
	13		0.0304	0.0304	↓
	14		0.0210	0.0210	↓
	15		ND	ND	↓
	16		0.0606	0.0606	↓
	17		ND	ND	↓
	18		ND	ND	↓

Note: *Rounding



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: 01/23/15 09:32

SUBMITTED: 01/16/15 to 01/20/15

AQS SITE CODE:

SITE CODE: Honeywell Hex Chrome Study

Description: OAM 1	Lab ID: 5011617-01	Sampled: 01/15/15 14:55
Matrix: Air	Sample Volume: 21.47 m ³	Received: 01/16/15 10:15
Comments: Start Time 1/14/15 15:03		Analysis Date: 01/21/15 14:08

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0264		0.0036

JAN 28 2015

Initials: *ER*



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: 01/23/15 09:32

SUBMITTED: 01/16/15 to 01/20/15

AQS SITE CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: OAM 2	Lab ID: 5011617-02	Sampled: 01/15/15 15:14
Matrix: Air	Sample Volume: 21.45 m ³	Received: 01/16/15 10:15
Comments: Start Time 1/14/15 15:24		Analysis Date: 01/21/15 14:18

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0254		0.0036

JAN 28 2015

Initials: ER



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: 01/23/15 09:32

SUBMITTED: 01/16/15 to 01/20/15

AQS SITE CODE:

SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1	Lab ID: 5011617-03	Sampled: 01/15/15 16:15
Matrix: Air	Sample Volume: 21.63 m ³	Received: 01/16/15 10:15
Comments: Col 1 Start Time 1/14/15 16:15		Analysis Date: 01/21/15 12:09

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0348		0.0036

JAN 28 2015

Initials: ER



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: 01/23/15 09:32

SUBMITTED: 01/16/15 to 01/20/15

AQS SITE CODE:

SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1D	Lab ID: 5011617-04	Sampled: 01/15/15 16:19
Matrix: Air	Sample Volume: 21.65 m ³	Received: 01/16/15 10:15
Comments: Col 2 Start Time 1/14/15 16:19		Analysis Date: 01/21/15 12:29

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0296		0.0036

JAN 28 2015

Initials: *CR*



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FILE #: 3926.00

REPORTED: 01/23/15 09:32

SUBMITTED: 01/16/15 to 01/20/15

AQS SITE CODE:

SITE CODE: Honeywell Hex Chrome Study

Description: PAM-2	Lab ID: 5011617-05	Sampled: 01/15/15 16:06
Matrix: Air	Sample Volume: 21.68 m ³	Received: 01/16/15 10:15
Comments: Start Time 1/14/15 16:01		Analysis Date: 01/21/15 14:28

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0412		0.0036

JAN 28 2015

Initials: *CR*



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FILE #: 3926.00

REPORTED: 01/23/15 09:32

SUBMITTED: 01/16/15 to 01/20/15

AQS SITE CODE:

SITE CODE: Honeywell Hex Chrome Study

Description: PAM-3	Lab ID: 5011617-06	Sampled: 01/15/15 15:58
Matrix: Air	Sample Volume: 21.72 m ³	Received: 01/16/15 10:15
Comments: Start Time 1/14/15 15:50		Analysis Date: 01/21/15 14:38

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0234		0.0036

JAN 28 2015

Initials: ER



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FILE #: 3926.00

REPORTED: 01/23/15 09:32

SUBMITTED: 01/16/15 to 01/20/15

AQS SITE CODE:

SITE CODE: Honeywell Hex Chrome Study

Description: PAM-4	Lab ID: 5011617-07	Sampled: 01/15/15 15:40
Matrix: Air	Sample Volume: 21.53 m ³	Received: 01/16/15 10:15
Comments: Start Time 1/14/15 15:45		Analysis Date: 01/21/15 14:48

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0384		0.0036

JAN 28 2015

Initials: *CR*



CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc

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FILE #: 3926.00

REPORTED: 01/23/15 09:32

SUBMITTED: 01/16/15 to 01/20/15

AQS SITE CODE:

SITE CODE: Honeywell Hex Chrome Study

Description: PAM-21	Lab ID: 5011617-08	Sampled: 01/15/15 00:00
Matrix: Air	Sample Volume: 21.68 m ³	Received: 01/16/15 10:15
Comments:		Analysis Date: 01/21/15 14:58

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 28 2015

Initials: *CR*



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FILE #: 3926.00

REPORTED: 01/23/15 09:32

SUBMITTED: 01/16/15 to 01/20/15

AQS SITE CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-31	Lab ID: 5011617-09	Sampled: 01/15/15 00:00
Matrix: Air	Sample Volume: 21.72 m ³	Received: 01/16/15 10:15
Comments:		Analysis Date: 01/21/15 15:08

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 28 2015

Initials: *ER*



CERTIFICATE OF ANALYSIS

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

FILE #: 3926.00
REPORTED: 01/23/15 09:32
SUBMITTED: 01/16/15 to 01/20/15
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

ATTN: Mr. Jeff Boggs

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

Description: OAM 1	Lab ID: 5012023-01	Sampled: 01/16/15 14:56
Matrix: Air	Sample Volume: 21.57 m ³	Received: 01/20/15 11:32
Comments: Start Time 1/15/15 14:58		Analysis Date: 01/21/15 15:18

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0209		0.0036

JAN 28 2015

Initials: *CR*



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FILE #: 3926.00

REPORTED: 01/23/15 09:32

SUBMITTED: 01/16/15 to 01/20/15

AQS SITE CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: OAM 2	Lab ID: 5012023-02	Sampled: 01/16/15 15:17
Matrix: Air	Sample Volume: 21.6 m ³	Received: 01/20/15 11:32
Comments: Start Time 1/15/15 15:17		Analysis Date: 01/21/15 15:28

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0194		0.0036

JAN 28 2015

Initials: *CR*



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FILE #: 3926.00

REPORTED: 01/23/15 09:32

SUBMITTED: 01/16/15 to 01/20/15

AQS SITE CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-1	Lab ID: 5012023-03	Sampled: 01/16/15 15:56
Matrix: Air	Sample Volume: 21.22 m ³	Received: 01/20/15 11:32
Comments: Col 1 Start Time 1/15/15 16:21		Analysis Date: 01/21/15 12:49

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0312		0.0036

JAN 28 2015

Initials: *ER*



CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

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PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/23/15 09:32

SUBMITTED: 01/16/15 to 01/20/15

AQS SITE CODE:

SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1D	Lab ID: 5012023-04	Sampled: 01/16/15 15:58
Matrix: Air	Sample Volume: 21.2 m ³	Received: 01/20/15 11:32
Comments: Col 2 Start Time 1/15/15 16:25		Analysis Date: 01/21/15 17:16

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0304		0.0036

JAN 28 2015

Initials: *CR*



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FILE #: 3926.00

REPORTED: 01/23/15 09:32

SUBMITTED: 01/16/15 to 01/20/15

AQS SITE CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-2	Lab ID: 5012023-05	Sampled: 01/16/15 15:48
Matrix: Air	Sample Volume: 21.28 m ³	Received: 01/20/15 11:32
Comments: Start Time 1/15/15 16:09		Analysis Date: 01/21/15 15:37

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0210		0.0036

JAN 28 2015

Initials: ER



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FILE #: 3926.00

REPORTED: 01/23/15 09:32

SUBMITTED: 01/16/15 to 01/20/15

AQS SITE CODE:

SITE CODE: Honeywell Hex Chrome Study

Description: PAM-3	Lab ID: 5012023-06	Sampled: 01/16/15 15:43
Matrix: Air	Sample Volume: 21.33 m ³	Received: 01/20/15 11:32
Comments: Start Time 1/15/15 16:01		Analysis Date: 01/21/15 16:54

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 28 2015

Initials: *CR*



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

FILE #: 3926.00
REPORTED: 01/23/15 09:32
SUBMITTED: 01/16/15 to 01/20/15
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

ATTN: Mr. Jeff Boggs

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

Description: PAM-4	Lab ID: 5012023-07	Sampled: 01/16/15 15:36
Matrix: Air	Sample Volume: 21.48 m ³	Received: 01/20/15 11:32
Comments: Start Time 1/15/15 15:43		Analysis Date: 01/21/15 16:17

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0606		0.0036

JAN 28 2015

Initials: *CR*



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FILE #: 3926.00

REPORTED: 01/23/15 09:32

SUBMITTED: 01/16/15 to 01/20/15

AQS SITE CODE:

SITE CODE: Honeywell Hex Chrome Study

Description: PAM-21	Lab ID: 5012023-08	Sampled: 01/16/15 00:00
Matrix: Air	Sample Volume: 21.28 m ³	Received: 01/20/15 11:32
Comments:		Analysis Date: 01/21/15 16:27

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 28 2015

Initials: *CR*



CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc

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FILE #: 3926.00

REPORTED: 01/23/15 09:32

SUBMITTED: 01/16/15 to 01/20/15

AQS SITE CODE:

SITE CODE: Honeywell Hex Chrome Study

Description: PAM-31

Lab ID: 5012023-09

Sampled: 01/16/15 00:00

Matrix: Air

Sample Volume: 21.33 m³

Received: 01/20/15 11:32

Comments:

Analysis Date: 01/21/15 16:37

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 28 2015

Initials: ER

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Harbor Point, MD, Hexavalent Chromium Monitoring
Collection Date: January 19 through January 20, 2015
LDC Report Date: January 28, 2015
Matrix: Air
Parameters: Hexavalent Chromium
Validation Level: EPA Level IV
Laboratory: Eastern Research Group
Sample Delivery Group (SDG): 5012023/5012118

Sample Identification

OAM 1(1/19/15)	PAM-1(1/20/15)DUP
OAM 2(1/19/15)	PAM-1D (1/20/15)DUP
PAM-1(1/19/15)	
PAM-1D (1/19/15)	
PAM-2(1/19/15)	
PAM-3(1/19/15)	
PAM-4(1/19/15)	
PAM-21(1/19/15)	
PAM-31(1/19/15)	
OAM 1(1/20/15)	
OAM 2(1/20/15)	
PAM-1(1/20/15)	
PAM-1D (1/20/15)	
PAM-2(1/20/15)	
PAM-3(1/20/15)	
PAM-4(1/20/15)	
PAM-21(1/20/15)	
PAM-31(1/20/15)	
PAM-1(1/19/15)DUP	
PAM-1D (1/19/15)DUP	

The date was appended to the sample ID to differentiate between samples.

Introduction

This data review covers 22 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.
- 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. Continuing Calibration

Continuing calibration 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(1/19/15) and PAM-31(1/20/15) were identified as trip blanks. No hexavalent chromium was found.

Samples PAM-21(1/19/15) and PAM-21(1/20/15) were identified as field blanks. No hexavalent chromium was found.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analysis was not required by the method.

VI. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results 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(1/19/15) and PAM-1D (1/19/15) and samples PAM-1(1/20/15) and PAM-1D (1/20/15) 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(1/19/15)	PAM-1D (1/19/15)			
Hexavalent chromium	0.0308	0.0254	19 (≤20)	-	-

Analyte	Concentration (ng/m ³)		RPD (Limits)	Flags	A or P
	PAM-1(1/20/15)	PAM-1D (1/20/15)			
Hexavalent chromium	0.115	0.101	13 (≤20)	-	-

**Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Data Qualification Summary - SDG 5012023/5012118**

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

**Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG
5012023/5012118**

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
5012023/5012118**

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

LDC #: 33590B6

VALIDATION COMPLETENESS WORKSHEET

Date: 1/27/15

SDG #: 5012023/5012118

Level IV

Page: 1 of 2

Laboratory: Eastern Research Group

Reviewer: JD

2nd Reviewer: [Signature]

METHOD: (Analyte) 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.	Sample receipt/Technical holding times	A	1/19-20/15
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	A	
V	Field blanks	ND	FB=(8)(17) TB=(9)(18)
VI.	Matrix Spike/Matrix Spike Duplicates	N	Not Required
VII.	Duplicate sample analysis	A	DUP
VIII.	Laboratory control samples	A	LCSID
IX.	Field duplicates	SW	FD=(3,4) (12,13)
X.	Sample result verification	A	
XI	Overall assessment of data	A	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

SB=Source blank
OTHER:

	Client ID	Lab ID	Matrix	Date
1	OAM 1(01/19/15)	5012023-10	air	01/19/15
2	OAM 2(01/19/15)	5012023-11	air	01/19/15
3	PAM-1(01/19/15)	5012023-12	air	01/19/15
4	PAM-1D(01/19/15)	5012023-13	air	01/19/15
5	PAM-2(01/19/15)	5012023-14	air	01/19/15
6	PAM-3(01/19/15)	5012023-15	air	01/19/15
7	PAM-4(01/19/15)	5012023-16	air	01/19/15
8	PAM-21(01/19/15)	5012023-17	air	01/19/15
9	PAM-31(01/19/15)	5012023-18	air	01/19/15
10	OAM 1(01/20/15)	5012118-01	air	01/20/15
11	OAM 2(01/20/15)	5012118-02	air	01/20/15
12	PAM-1(01/20/15)	5012118-03	air	01/20/15
13	PAM-1D(01/20/15)	5012118-04	air	01/20/15
14	PAM-2(01/20/15)	5012118-05	air	01/20/15
15	PAM-3(01/20/15)	5012118-06	air	01/20/15
16	PAM-4(01/20/15)	5012118-07	air	01/20/15
17	PAM-21(01/20/15)	5012118-08	air	01/20/15

LDC #: 33590B6

VALIDATION COMPLETENESS WORKSHEET

Date: 1/27/15

SDG #: 5012023/5012118

Level IV

Page: 2 of 2

Laboratory: Eastern Research Group

Reviewer: SD

2nd Reviewer: [Signature]

METHOD: (Analyte) Hexavalent Chromium (ASTM D7614)

	Client ID	Lab ID	Matrix	Date
18	PAM-31(01/20/15)	5012118-09	air	01/20/15
19	PAM-1(01/19/15)DUP	5012023-12DUP	air	01/19/15
20	PAM-1D(01/19/15)DUP	5012023-13DUP	air	01/19/15
21	PAM-1(01/20/15)DUP	5012118-03DUP	air	01/20/15
22	PAM-1D(01/20/15)DUP	5012118-04DUP	air	01/20/15
23				
24				
25				
26				
27				

Notes: _____

Method: Inorganics (EPA Method See Cover)

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% QC limits? <u>85-115</u>	/			
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?			/	

VALIDATION FINDINGS CHECKLIST

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.		/		

LDC# 33590B6

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: JD
2nd Reviewer: ea

Inorganics: Method See Cover

Analyte	Concentration (ng/m3)		RPD (≤ 20)	Qual.
	3	4		
Hexavalent Chromium	0.0308	0.0254	19	

Analyte	Concentration (ng/m3)		RPD (≤ 20)	Qual.
	12	13		
Hexavalent Chromium	0.115	0.101	13	

\\LDCFILESERVER\Validation\FIELD DUPLICATES\FD_inorganic\33590B6.wpd

LDC #: 335910B10

Validation Findings Worksheet
Initial and Continuing Calibration Calculation Verification

Page: 1 of 1
 Reviewer: JD
 2nd Reviewer: R

Method: Inorganics, Method See Cover

The correlation coefficient (r) for the calibration of C^{As} was recalculated. Calibration date: 1/22/15

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. (ng/ml)	Area	Recalculated	Reported	Acceptable (Y/N)
					r or r ²	r or r ²	
Initial calibration	C ^{As}	s1	0.05	0.0000135	0.99999	0.99999	Y
		s2	0.1	0.0000317			
		s3	0.2	0.0000763			
		s4	0.5	0.0002078			
		s5	1	0.0004309			
		s6	2	0.0008726			
ICV 10:45 Calibration verification	C ^{As}	<u>Found</u> 0.5246 ng/ml	<u>True</u> 0.5 ng/ml		104.9%R	104.9%R	↓
CCV 11:45 Calibration verification	C ^{As}	0.5291 ng/ml	0.5 ng/ml		105.8%R	105.8%R	↓
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 #: 33590810

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: JD
2nd Reviewer: E

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 11:15	Laboratory control sample	C ⁺⁶	1.10 ng/ml	1.00 ng/ml	110%R	110%R	Y
N	Matrix spike sample		(SSR-SR)				
DUP 12:14	Duplicate sample	C ⁺⁶	0.0299 ng/ml ³	0.0309 ng/ml ³	3.29%RPD	3.09%RPD	YX

Comments: * Rounding

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

METHOD: Inorganics, Method See lower

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 (13) Cr⁺⁶ reported with a positive detect were recalculated and verified using the following equation:

Concentration = $(A - C_0) / C_1$

Recalculation: $\frac{(0.0000852 - (-1.14E-05))}{0.0004419} = 0.2186 \text{ ng/ml}$

$A = 0.0000852$
 $C_0 = -1.14E-05$
 $C_1 = 0.0004419$

$\frac{(ng/ml)(ml)}{m^3} = ng/m^3$

$\frac{(0.2186 \text{ ng/ml})(10 \text{ ml})}{21.59 \text{ m}^3} = 0.101 \text{ ng/m}^3$

#	Sample ID	Analyte	Reported Concentration (ng/m ³)	Calculated Concentration (ng/m ³)	Acceptable (Y/N)
	1	Cr ⁺⁶	0.0252	0.0252	Y
	2		ND	ND	↓
	3		0.0308	0.0309	Y*
	4		0.0254	0.0255	Y*
	5		0.0215	0.0216	Y*
	6		ND	ND	Y
	7		0.0568	0.0568	↓
	8		ND	ND	↓
	9		ND	ND	↓
	10		0.0661	0.0661	↓
	11		0.0623	0.0623	↓
	12		0.115	0.115	↓
	13		0.101	0.101	↓
	14		0.105	0.105	↓
	15		0.0909	0.0910	Y*
	16		0.0978	0.0978	Y
	17		ND	ND	↓
	18		ND	ND	↓

Note: *Rounding



CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
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ATTN: Mr. Jeff Boggs

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

FILE #: 3926.00

REPORTED: 01/27/15 10:12

SUBMITTED: 01/20/15 to 01/21/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: OAM 1	Lab ID: 5012023-10	Sampled: 01/19/15 14:44
Matrix: Air	Sample Volume: 21.39 m ³	Received: 01/20/15 11:32
Comments: Start Time 1/18/15 14:58		Analysis Date: 01/22/15 13:26

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0252		0.0036

JAN 28 2015

Initials: *ER*



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AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: OAM 2	Lab ID: 5012023-11	Sampled: 01/19/15 15:08
Matrix: Air	Sample Volume: 21.39 m ³	Received: 01/20/15 11:32
Comments: Start Time 1/18/15 15:21		Analysis Date: 01/22/15 13:36

Hexavalent Chromium by SOP ERG-MOR-063

<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

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AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1	Lab ID: 5012023-12	Sampled: 01/19/15 16:04
Matrix: Air	Sample Volume: 21.34 m ³	Received: 01/20/15 11:32
Comments: Col 1 Start Time 1/18/15 16:21		Analysis Date: 01/22/15 12:06

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0308		0.0036

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AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-1D	Lab ID: 5012023-13	Sampled: 01/19/15 16:07
Matrix: Air	Sample Volume: 21.34 m ³	Received: 01/20/15 11:32
Comments: Col 2 Start Time 1/18/15 16:25		Analysis Date: 01/22/15 12:26

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0254		0.0036

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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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AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-2

Lab ID: 5012023-14

Sampled: 01/19/15 15:53

Matrix: Air

Sample Volume: 21.62 m³

Received: 01/20/15 11:32

Comments: Start Time 1/18/15 16:00

Analysis Date: 01/22/15 14:05

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0215		0.0036

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AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-3	Lab ID: 5012023-15	Sampled: 01/19/15 15:35
Matrix: Air	Sample Volume: 21.38 m ³	Received: 01/20/15 11:32
Comments: Start Time 1/18/15 15:50		Analysis Date: 01/22/15 14:15

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 28 2015

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AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-4	Lab ID: 5012023-16	Sampled: 01/19/15 15:26
Matrix: Air	Sample Volume: 21.39 m ³	Received: 01/20/15 11:32
Comments: Start Time 1/18/15 15:40		Analysis Date: 01/22/15 14:25

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0568		0.0036

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AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-21

Lab ID: 5012023-17

Sampled: 01/19/15 00:00

Matrix: Air

Sample Volume: 21.62 m³

Received: 01/20/15 11:32

Comments:

Analysis Date: 01/22/15 14:35

Hexavalent Chromium by SOP ERG-MOR-063

<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

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SUBMITTED: 01/20/15 to 01/21/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-31

Lab ID: 5012023-18

Sampled: 01/19/15 00:00

Matrix: Air

Sample Volume: 21.38 m³

Received: 01/20/15 11:32

Comments:

Analysis Date: 01/22/15 14:45

Hexavalent Chromium by SOP ERG-MOR-063

<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

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REPORTED: 01/27/15 10:12

SUBMITTED: 01/20/15 to 01/21/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: OAM 1	Lab ID: 5012118-01	Sampled: 01/20/15 14:57
Matrix: Air	Sample Volume: 21.75 m ³	Received: 01/21/15 10:46
Comments: Start Time 1/19/15 14:47		Analysis Date: 01/22/15 14:55

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0661		0.0036

JAN 28 2015

Initials: ER



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REPORTED: 01/27/15 10:12

SUBMITTED: 01/20/15 to 01/21/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: OAM 2	Lab ID: 5012118-02	Sampled: 01/20/15 15:22
Matrix: Air	Sample Volume: 21.78 m ³	Received: 01/21/15 10:46
Comments: Start Time 1/19/15 15:10		Analysis Date: 01/22/15 15:05

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0623		0.0036

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Initials: *CR*



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REPORTED: 01/27/15 10:12

SUBMITTED: 01/20/15 to 01/21/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1	Lab ID: 5012118-03	Sampled: 01/20/15 16:06
Matrix: Air	Sample Volume: 21.58 m ³	Received: 01/21/15 10:46
Comments: Col 1 Start Time 1/19/15 16:07		Analysis Date: 01/22/15 12:45

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.115		0.0036

JAN 28 2015

Initials: *ER*



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REPORTED: 01/27/15 10:12

SUBMITTED: 01/20/15 to 01/21/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-1D

Lab ID: 5012118-04

Sampled: 01/20/15 16:09

Matrix: Air

Sample Volume: 21.59 m³

Received: 01/21/15 10:46

Comments: Col 2 Start Time 1/19/15 16:10

Analysis Date: 01/22/15 13:05

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.101		0.0036

JAN 28 2015

Initials: *ER*



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FILE #: 3926.00

REPORTED: 01/27/15 10:12

SUBMITTED: 01/20/15 to 01/21/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-2	Lab ID: 5012118-05	Sampled: 01/20/15 15:56
Matrix: Air	Sample Volume: 21.6 m ³	Received: 01/21/15 10:46
Comments: Start Time 1/19/15 15:56		Analysis Date: 01/22/15 15:15

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.105		0.0036

JAN 28 2015

Initials: *CR*



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FILE #: 3926.00

REPORTED: 01/27/15 10:12

SUBMITTED: 01/20/15 to 01/21/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-3	Lab ID: 5012118-06	Sampled: 01/20/15 15:49
Matrix: Air	Sample Volume: 21.76 m ³	Received: 01/21/15 10:46
Comments: Start Time 1/19/15 15:38		Analysis Date: 01/22/15 15:25

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0909		0.0036

JAN 28 2015

Initials: *ER*



CERTIFICATE OF ANALYSIS

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FILE #: 3926.00

REPORTED: 01/27/15 10:12

SUBMITTED: 01/20/15 to 01/21/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-4	Lab ID: 5012118-07	Sampled: 01/20/15 15:44
Matrix: Air	Sample Volume: 21.83 m ³	Received: 01/21/15 10:46
Comments: Start Time 1/19/15 15:29		Analysis Date: 01/22/15 15:35

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0978		0.0036

JAN 28 2015

Initials: ER



CERTIFICATE OF ANALYSIS

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FILE #: 3926.00

REPORTED: 01/27/15 10:12

SUBMITTED: 01/20/15 to 01/21/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-21	Lab ID: 5012118-08	Sampled: 01/20/15 00:00
Matrix: Air	Sample Volume: 21.6 m ³	Received: 01/21/15 10:46
Comments:		Analysis Date: 01/22/15 16:04

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 28 2015

Initials: CR



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FILE #: 3926.00

REPORTED: 01/27/15 10:12

SUBMITTED: 01/20/15 to 01/21/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-31	Lab ID: 5012118-09	Sampled: 01/20/15 00:00
Matrix: Air	Sample Volume: 21.76 m ³	Received: 01/21/15 10:46
Comments:		Analysis Date: 01/22/15 16:14

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 28 2015

Initials: ER



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

February 2, 2015

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

Dear Mr. Boggs,

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

LDC Project #33618:

SDG

5012218/5012306

Fraction

Hexavalent Chromium

- Corrected the sampling date to January 21 through January 22, 2015

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: January 21 through January 22, 2015
LDC Report Date: February 2, 2015
Matrix: Air
Parameters: Hexavalent Chromium
Validation Level: EPA Level IV
Laboratory: Eastern Research Group
Sample Delivery Group (SDG): 5012218/5012306

Sample Identification

OAM 1 (01/21/15)	PAM-1 (01/22/15)DUP
OAM 2 (01/21/15)	PAM-1D (01/22/15)DUP
PAM-1 (01/21/15)	
PAM-1D (01/21/15)	
PAM-2 (01/21/15)	
PAM-3 (01/21/15)	
PAM-4 (01/21/15)	
PAM-21 (01/21/15)	
PAM-31 (01/21/15)	
OAM 1 (01/22/15)	
OAM 2 (01/22/15)	
PAM-1 (01/22/15)	
PAM-1D (01/22/15)	
PAM-2 (01/22/15)	
PAM-3 (01/22/15)	
PAM-4 (01/22/15)	
PAM-21 (01/22/15)	
PAM-31 (01/22/15)	
PAM-1 (01/21/15)DUP	
PAM-1D (01/21/15)DUP	

The date was appended to the sample ID to differentiate between samples.

Introduction

This data review covers 22 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.
- 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. Continuing Calibration

Continuing calibration 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(1/21/15) and PAM-31(1/22/15) were identified as trip blanks. No hexavalent chromium was found.

Samples PAM-21(1/21/15) and PAM-21(1/22/15) were identified as field blanks. No hexavalent chromium was found.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analysis was not required by the method.

VI. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results 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(1/21/15) and PAM-1D (1/21/15) and samples PAM-1(1/22/15) and PAM-1D (1/22/15) 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(1/21/15)	PAM-1D (1/21/15)			
Hexavalent chromium	0.0493	0.0478	3 (≤20)	-	-

**Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Data Qualification Summary - SDG 5012218/5012306**

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

**Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG
5012218/5012306**

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
5012218/5012306**

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

LDC #: 33618A6

VALIDATION COMPLETENESS WORKSHEET

Date: 1/21/15

SDG #: 5012218/5012306

Level IV

Page: 1 of 2

Laboratory: Eastern Research Group

Reviewer: SD

2nd Reviewer: **METHOD: (Analyte) 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.	Sample receipt/Technical holding times	A	1/22-23/15 or 1/21-1/22/15
II.	Initial calibration	A	
III.	Calibration verification	A	
IV.	Laboratory Blanks	A	
V.	Field blanks	ND	FB=(8)(17) TB=(9)(18)
VI.	Matrix Spike/Matrix Spike Duplicates	N	Not Required
VII.	Duplicate sample analysis	A	DUP
VIII.	Laboratory control samples	A	LCS/D
IX.	Field duplicates	SW	FD=(3,4)(12,13)
X.	Sample result verification	A	
XI.	Overall assessment of data	A	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

SB=Source blank
OTHER:

	Client ID	Lab ID	Matrix	Date
1	OAM 1 (01/21/15)	5012218-01	air	01/21/15
2	OAM 2 (01/21/15)	5012218-02	air	01/21/15
3	PAM-1 (01/21/15)	5012218-03	air	01/21/15
4	PAM-1D (01/21/15)	5012218-04	air	01/21/15
5	PAM-2 (01/21/15)	5012218-05	air	01/21/15
6	PAM-3 (01/21/15)	5012218-06	air	01/21/15
7	PAM-4 (01/21/15)	5012218-07	air	01/21/15
8	PAM-21 (01/21/15)	5012218-08	air	01/21/15
9	PAM-31 (01/21/15)	5012218-09	air	01/21/15
10	OAM 1 (01/22/15)	5012306-01	air	01/22/15
11	OAM 2 (01/22/15)	5012306-02	air	01/22/15
12	PAM-1 (01/22/15)	5012306-03	air	01/22/15
13	PAM-1D (01/22/15)	5012306-04	air	01/22/15
14	PAM-2 (01/22/15)	5012306-05	air	01/22/15
15	PAM-3 (01/22/15)	5012306-06	air	01/22/15
16	PAM-4 (01/22/15)	5012306-07	air	01/22/15
17	PAM-21 (01/22/15)	5012306-08	air	01/22/15

LDC #: 33618A6

VALIDATION COMPLETENESS WORKSHEET

Date: 1/29/15

SDG #: 5012218/5012306

Level IV

Page: 2 of 2

Laboratory: Eastern Research Group

Reviewer: SD

2nd Reviewer: AK

METHOD: (Analyte) Hexavalent Chromium (ASTM D7614)

	Client ID	Lab ID	Matrix	Date
18	PAM-31 (01/22/15)	5012306-09	air	01/22/15
19	PAM-1 (01/21/15)DUP	5012218-03DUP	air	01/21/15
20	PAM-1D (01/21/15)DUP	5012218-04DUP	air	01/21/15
21	PAM-1 (01/22/15)DUP	5012306-03DUP	air	01/22/15
22	PAM-1D (01/22/15)DUP	5012306-04DUP	air	01/22/15
23				
24				
25				
26				
27				
28				
29				
30				

Notes: _____

Method: Inorganics (EPA Method 30.1)

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% QC limits?	/			85-115
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.	/		/	SD
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 #: 33618A10

VALIDATION FINDINGS CHECKLIST

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

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.		/		

LDC# 33618A6

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: SD
2nd Reviewer: ✓

Inorganics: Method See Cover

Analyte	Concentration (ng/m3)		RPD (≤ 20)	Qual.
	3	4		
Hexavalent Chromium	0.0493	0.0478	3	

\\LDCFILESERVER\Validation\FIELD DUPLICATES\FD_inorganic\33618A6.wpd

LDC #: 33018A6

Validation Findings Worksheet
Initial and Continuing Calibration Calculation Verification

Page: 1 of 1
 Reviewer: SD
 2nd Reviewer: S

Method: Inorganics, Method See Cover

The correlation coefficient (r) for the calibration of Cr⁺⁶ was recalculated. Calibration date: 1/27/15

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. (ng/ml)	Area	Recalculated	Reported	Acceptable (Y/N)
					r or r ²	r or r ²	
Initial calibration	Cr ⁺⁶	s1	0.05	0.000013	0.99995	0.99995	Y
		s2	0.1	0.0000334			
		s3	0.2	0.0000778			
		s4	0.5	0.0002057			
		s5	1	0.0004058			
		s6	2	0.0008311			
ICV 11:08 Calibration verification	Cr ⁺⁶	<u>Found</u> 0.5119ug/ml	<u>True</u> 0.5ng/ml		102.4%R	102.4%R	↓
CCV 12:07 Calibration verification	Cr ⁺⁶	0.5374ug/ml	0.5ng/ml		107.5%R	107.5%R	
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 #: 3301810

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: SD
2nd Reviewer: g

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	
LLS 11:37	Laboratory control sample	Cr ⁺⁶	1.078 ng/ml	1.000 ng/ml	108%R	108%R	Y
N	Matrix spike sample		(SSR-SR)				
DUP 12:38	Duplicate sample	Cr ⁺⁶	0.0502 ng/l ³	0.0493 ng/l ³	1.81%RPD	1.80%RPD	Y

Comments: _____

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 (6) Cr⁺⁶ reported with a positive detect were recalculated and verified using the following equation:

Concentration = $(A - C_0) / C_1$
 Recalculation: $(A - (-7.36E-06)) / 0.0004184 = 0.0941$
 $A = 0.000032$ (ng/ml) (uf)
 $C_0 = -7.36E-06$
 $C_1 = 0.0004184$
 $UF = 10ml, m^3 = 21.89$
 $0.000032 - (-7.36E-06) / 0.0004184 = 0.0941$
 $(0.0941 ng/ml)(10ml) / 21.89 m^3 = 0.0430$
 SD

#	Sample ID	Analyte	Reported Concentration (ng/m ³)	Calculated Concentration (ng/m ³)	Acceptable (Y/N)
	1	Cr ⁺⁶	ND	ND	Y
	2		0.0743	0.0743	Y
	3		0.0493	0.0493	Y
	4		0.0478	0.0478	Y
	5		0.0631	0.0631	Y
	6		0.0430	0.0430	Y
	7		0.0495	0.0494	Y*
	8		ND	ND	Y
	9		ND	ND	Y
	10		ND	ND	Y
	11		ND	ND	Y
	12		ND	ND	Y
	13		ND	ND	Y
	14		ND	ND	Y
	15		ND	ND	Y
	16		0.0342	0.343	Y*
	17		ND	ND	Y
	18		ND	ND	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: 01/29/15 15:38

SUBMITTED: 01/22/15 to 01/23/15

AQS SITE

CODE:
SITE CODE:

Honeywell Hex Chrome Study

Description: OAM 1

Lab ID: 5012218-01

Sampled: 01/21/15 14:53

Matrix: Air

Sample Volume: 21.48 m³

Received: 01/22/15 10:52

Comments: Start Time 1/20/15 15:01

Analysis Date: 01/27/15 14:27

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 30 2015

Initials: *CR*

Eastern Research Group

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FILE #: 3926.00

REPORTED: 01/29/15 15:38

SUBMITTED: 01/22/15 to 01/23/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: OAM 2	Lab ID: 5012218-02	Sampled: 01/21/15 15:25
Matrix: Air	Sample Volume: 21.59 m ³	Received: 01/22/15 10:52
Comments: Start Time 1/20/15 15:26		Analysis Date: 01/27/15 14:37

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0743		0.0036

JAN 30 2015

Initials: *CR*

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REPORTED: 01/29/15 15:38

SUBMITTED: 01/22/15 to 01/23/15

AQS SITE

CODE:
SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-1

Lab ID: 5012218-03

Sampled: 01/21/15 16:59

Matrix: Air

Sample Volume: 22.35 m³

Received: 01/22/15 10:52

Comments: Col 1 Start Time 1/20/15 16:09

Analysis Date: 01/27/15 12:28

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0493		0.0036

JAN 30 2015

Initials: *ER*

Eastern Research Group

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FILE #: 3926.00

REPORTED: 01/29/15 15:38

SUBMITTED: 01/22/15 to 01/23/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1D

Lab ID: 5012218-04

Sampled: 01/21/15 17:11

Matrix: Air

Sample Volume: 22.49 m³

Received: 01/22/15 10:52

Comments: Col 2 Start Time 1/20/15 16:12

Analysis Date: 01/27/15 13:57

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0478		0.0036

JAN 30 2015

Initials: *CR*



CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc

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Malvern, PA 19355

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FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/29/15 15:38

SUBMITTED: 01/22/15 to 01/23/15

AQS SITE

CODE:
SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-2

Lab ID: 5012218-05

Sampled: 01/21/15 16:30

Matrix: Air

Sample Volume: 22.07 m³

Received: 01/22/15 10:52

Comments: Start Time 1/20/15 15:59

Analysis Date: 01/27/15 14:47

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0631		0.0036

JAN 30 2015

Initials: *CR*

Eastern Research Group

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FILE #: 3926.00

REPORTED: 01/29/15 15:38

SUBMITTED: 01/22/15 to 01/23/15

AQS SITE

CODE:
SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-3

Lab ID: 5012218-06

Sampled: 01/21/15 16:11

Matrix: Air

Sample Volume: 21.89 m³

Received: 01/22/15 10:52

Comments: Start Time 1/20/15 15:51

Analysis Date: 01/27/15 17:17

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0430		0.0036

JAN 30 2015

Initials: *ER*

Eastern Research Group

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Malvern, PA 19355

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FILE #: 3926.00

REPORTED: 01/29/15 15:38

SUBMITTED: 01/22/15 to 01/23/15

AQS SITE

CODE: Honeywell Hex Chrome Study
SITE CODE:

Description: PAM-4	Lab ID: 5012218-07	Sampled: 01/21/15 15:52
Matrix: Air	Sample Volume: 21.69 m ³	Received: 01/22/15 10:52
Comments: Start Time 1/20/15 15:46		Analysis Date: 01/27/15 15:07

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0495		0.0036

JAN 30 2015

Initials: *ER*



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: 01/29/15 15:38

SUBMITTED: 01/22/15 to 01/23/15

AQS SITE

CODE:
SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-21

Lab ID: 5012218-08

Sampled: 01/21/15 00:00

Matrix: Air

Sample Volume: 22.07 m³

Received: 01/22/15 10:52

Comments:

Analysis Date: 01/27/15 15:17

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 30 2015

Initials: *CR*

Eastern Research Group

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Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/29/15 15:38

SUBMITTED: 01/22/15 to 01/23/15

AQS SITE

CODE:
SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-31

Lab ID: 5012218-09

Sampled: 01/21/15 00:00

Matrix: Air

Sample Volume: 21.89 m³

Received: 01/22/15 10:52

Comments:

Analysis Date: 01/27/15 15:27

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 30 2015

Initials: *CR*

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: 01/29/15 15:38

SUBMITTED: 01/22/15 to 01/23/15

AQS SITE

CODE:
SITE CODE:

Honeywell Hex Chrome Study

Description: OAM 1

Lab ID: 5012306-01

Sampled: 01/22/15 15:14

Matrix: Air

Sample Volume: 23.63 m³

Received: 01/23/15 10:42

Comments: Start Time 1/21/15 15:02

Analysis Date: 01/27/15 15:37

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0033

JAN 30 2015

Initials: *ER*

Eastern Research Group

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Malvern, PA 19355

ATTN: Mr. Jeff Boggs

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

FILE #: 3926.00

REPORTED: 01/29/15 15:38

SUBMITTED: 01/22/15 to 01/23/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: OAM 2	Lab ID: 5012306-02	Sampled: 01/22/15 15:53
Matrix: Air	Sample Volume: 21.94 m ³	Received: 01/23/15 10:42
Comments: Start Time 1/21/15 15:30		Analysis Date: 01/27/15 15:46

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 30 2015

Initials: *CR*

Eastern Research Group

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FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/29/15 15:38

SUBMITTED: 01/22/15 to 01/23/15

AQS SITE

CODE: Honeywell Hex Chrome Study
SITE CODE:

Description: PAM-1	Lab ID: 5012306-03	Sampled: 01/22/15 17:58
Matrix: Air	Sample Volume: 22.34 m ³	Received: 01/23/15 10:42
Comments: Col 1 Start Time 1/21/15 17:08		Analysis Date: 01/27/15 13:07

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 30 2015

Initials: *CR*

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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: 01/29/15 15:38

SUBMITTED: 01/22/15 to 01/23/15

AQS SITE

CODE:
SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-1D

Lab ID: 5012306-04

Sampled: 01/22/15 18:08

Matrix: Air

Sample Volume: 22.39 m³

Received: 01/23/15 10:42

Comments: Col 2 Start Time 1/21/15 17:15

Analysis Date: 01/27/15 13:27

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 30 2015

Initials: *CR*

Eastern Research Group

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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: 01/29/15 15:38

SUBMITTED: 01/22/15 to 01/23/15

AQS SITE

CODE:
SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-2

Lab ID: 5012306-05

Sampled: 01/22/15 17:19

Matrix: Air

Sample Volume: 22.25 m³

Received: 01/23/15 10:42

Comments: Start Time 1/21/15 16:36

Analysis Date: 01/27/15 15:56

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 30 2015

Initials: *CR*

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: 01/29/15 15:38

SUBMITTED: 01/22/15 to 01/23/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-3	Lab ID: 5012306-06	Sampled: 01/22/15 16:54
Matrix: Air	Sample Volume: 22.08 m ³	Received: 01/23/15 10:42
Comments: Start Time 1/21/15 16:22		Analysis Date: 01/27/15 16:26

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 30 2015

Initials: *CR*

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: 01/29/15 15:38

SUBMITTED: 01/22/15 to 01/23/15

AQS SITE

CODE:
SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-4

Lab ID: 5012306-07

Sampled: 01/22/15 16:33

Matrix: Air

Sample Volume: 22.14 m³

Received: 01/23/15 10:42

Comments: Start Time 1/21/15 15:57

Analysis Date: 01/27/15 16:36

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0342		0.0036

JAN 30 2015

Initials: *CR*

Eastern Research Group

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Malvern, PA 19355

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PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/29/15 15:38

SUBMITTED: 01/22/15 to 01/23/15

AQS SITE

CODE:
SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-21

Lab ID: 5012306-08

Sampled: 01/22/15 00:00

Matrix: Air

Sample Volume: 22.25 m³

Received: 01/23/15 10:42

Comments:

Analysis Date: 01/27/15 16:46

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 30 2015

Initials: ER

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: 01/29/15 15:38

SUBMITTED: 01/22/15 to 01/23/15

AQS SITE

CODE:
SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-31

Lab ID: 5012306-09

Sampled: 01/22/15 00:00

Matrix: Air

Sample Volume: 22.08 m³

Received: 01/23/15 10:42

Comments:

Analysis Date: 01/27/15 16:56

Hexavalent Chromium by SOP ERG-MOR-063

<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

JAN 30 2015

Initials: ER

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

February 5, 2015

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

Dear Mr. Boggs,

Enclosed is the final validation report for the fraction listed below. This SDG was received on February 3, 2015. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #33647:

SDG

5012726/5012816

Fraction

Hexavalent Chromium

The data validation was performed under EPA Level IV guidelines. The analyses were validated using the following documents, as applicable to each method:

- Air Monitoring Program Quality Assurance Project Plan, Area 1, Phase 1 Development, Version 1, Baltimore Works Site, Baltimore, Maryland, March 2014
- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, January 2010

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: January 23 through January 27, 2015

LDC Report Date: February 4, 2015

Matrix: Air

Parameters: Hexavalent Chromium

Validation Level: EPA Level IV

Laboratory: Eastern Research Group

Sample Delivery Group (SDG): 5012726/5012816

Sample Identification

OAM 2 (01/23/15)	PAM-2 (01/26/15)	PAM-1 (01/27/15)DUP
PAM-1 (01/23/15)	PAM-3 (01/26/15)	PAM-1D (01/27/15)DUP
PAM-1D (01/23/15)	PAM-4 (01/26/15)	
PAM-2 (01/23/15)	PAM-21 (01/26/15)	
PAM-3 (01/23/15)	PAM-31 (01/26/15)	
PAM-4 (01/23/15)	OAM 1 (01/27/15)	
PAM-21 (01/23/15)	OAM 2 (01/27/15)	
PAM-31 (01/23/15)	PAM-1 (01/27/15)	
OAM 1 (01/24/15)	PAM-1D (01/27/15)	
OAM 2 (01/24/15)	PAM-2 (01/27/15)	
PAM-1 (01/24/15)	PAM-3 (01/27/15)	
PAM-1D (01/24/15)	PAM-4 (01/27/15)	
PAM-3 (01/24/15)	PAM-21 (01/27/15)	
PAM-4 (01/24/15)	PAM-31 (01/27/15)	
PAM-21 (01/24/15)	PAM-1 (01/23/15)DUP	
PAM-31 (01/24/15)	PAM-1D (01/23/15)DUP	
OAM 1 (01/26/15)	PAM-1 (01/24/15)DUP	
OAM 2 (01/26/15)	PAM-1D (01/24/15)DUP	
PAM-1 (01/26/15)	PAM-1 (01/26/15)DUP	
PAM-1D (01/26/15)	PAM-1D (01/26/15)DUP	

The date was appended to the sample ID to differentiate between samples.

Introduction

This data review covers 42 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.
- 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. Continuing Calibration

Continuing calibration frequency and analysis criteria were met with the following exceptions:

Date	Lab. Reference/ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
1/29/15	CCV (15:56)	Hexavalent chromium	116 (90-110)	OAM 1 (01/26/15) OAM 2 (01/26/15) PAM-2 (01/26/15) PAM-3 (01/26/15) PAM-4 (01/26/15)	J (all detects)	P
1/29/15	CCV (15:56)	Hexavalent chromium	116 (90-110)	PAM-21 (01/26/15) PAM-31 (01/26/15) OAM 1 (01/27/15) OAM 2 (01/27/15) PAM-2 (01/27/15) PAM-3 (01/27/15) PAM-4 (01/27/15) PAM-21 (01/27/15) PAM-31 (01/27/15)	NA	-

Although the above listed %R flagged "NA" demonstrates a high bias, the affected compound in the associated sample was non-detected and did not warrant the qualification of the data.

IV. Blanks

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

Samples PAM-31 (01/23/15), PAM-31 (01/24/15), PAM-31 (01/26/15), and PAM-31 (01/27/15) were identified as trip blanks. No hexavalent chromium was found.

Samples PAM-21 (01/23/15), PAM-21 (01/24/15), PAM-21 (01/26/15), and PAM-21 (01/27/15) were identified as field blanks. No hexavalent chromium was found.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analysis was not required by the method.

VI. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results 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 (01/23/15) and PAM-1D (01/23/15), samples PAM-1 (01/24/15) and PAM-1D (01/24/15), PAM-1 (01/26/15) and PAM-1D (01/26/15), and samples PAM-1 (01/27/15) and PAM-1D (01/27/15) 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 (01/23/15)	PAM-1D (01/23/15)			
Hexavalent chromium	0.0214	0.0331	43 (≤20)	J (all detects)	A

Analyte	Concentration (ng/m ³)		RPD (Limits)	Flags	A or P
	PAM-1 (01/24/15)	PAM-1D (01/24/15)			
Hexavalent chromium	0.0461	0.0495	7 (≤20)	-	-

Analyte	Concentration (ng/m ³)		RPD (Limits)	Flags	A or P
	PAM-1 (01/26/15)	PAM-1D (01/26/15)			
Hexavalent chromium	0.0304	0.0333	9 (≤20)	-	-

Analyte	Concentration (ng/m ³)		RPD (Limits)	Flags	A or P
	PAM-1 (01/27/15)	PAM-1D (01/27/15)			
Hexavalent chromium	0.0152	0.0036U	123 (≤20)	NQ	-

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

**Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Data Qualification Summary - SDG 5012726/5012816**

SDG	Sample	Analyte	Flag	A or P	Reason
5012726/ 5012816	OAM 1 (01/26/15) OAM 2 (01/26/15) PAM-2 (01/26/15) PAM-3 (01/26/15) PAM-4 (01/26/15)	Hexavalent chromium	J (all detects)	P	Calibration (CCV %R)
5012726/ 5012816	OAM 2 (01/23/15) PAM-1 (01/23/15) PAM-1D (01/23/15) PAM-2 (01/23/15) PAM-3 (01/23/15) PAM-4 (01/23/15)	Hexavalent chromium	J (all detects)	A	Field duplicates (RPD)

**Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG
5012726/5012816**

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
5012726/5012816**

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

LDC #: 33647A6

VALIDATION COMPLETENESS WORKSHEET

Date: 2/4/15

SDG #: 5012726/5012816

Level IV

Page: 1 of 1

Laboratory: Eastern Research Group

Reviewer: JD

2nd Reviewer: AL

METHOD: (Analyte) 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.	Sample receipt/Technical holding times	A	1/23-27/15
II	Initial calibration	A	
III.	Calibration verification	SW	
IV	Laboratory Blanks	A	
V	Field blanks	ND	FB=(7)(15)(24)(33), TB=(8)(10)(25)(34)
VI.	Matrix Spike/Matrix Spike Duplicates	N	Not Required
VII.	Duplicate sample analysis	A	
VIII.	Laboratory control samples	A	LCS/D
IX.	Field duplicates	SW	FD=(2,3)(11,12)(19,20)(28,29)
X.	Sample result verification	A	
XI	Overall assessment of data	A	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

SB=Source blank
OTHER:

	Client ID	Lab ID	Matrix	Date
1	OAM 2 (01/23/15)	5012726-02	air	01/23/15
2	PAM-1 (01/23/15)	5012726-03	air	01/23/15
3	PAM-1D (01/23/15)	5012726-04	air	01/23/15
4	PAM-2 (01/23/15)	5012726-05	air	01/23/15
5	PAM-3 (01/23/15)	5012726-06	air	01/23/15
6	PAM-4 (01/23/15)	5012726-07	air	01/23/15
7	PAM-21 (01/23/15)	5012726-08	air	01/23/15
8	PAM-31 (01/23/15)	5012726-09	air	01/23/15
9	OAM 1 (01/24/15)	5012726-10	air	01/24/15
10	OAM 2 (01/24/15)	5012726-11	air	01/24/15
11	PAM-1 (01/24/15)	5012726-12	air	01/24/15
12	PAM-1D (01/24/15)	5012726-13	air	01/24/15
13	PAM-3 (01/24/15)	5012726-15	air	01/24/15
14	PAM-4 (01/24/15)	5012726-16	air	01/24/15
15	PAM-21 (01/24/15)	5012726-17	air	01/24/15
16	PAM-31 (01/24/15)	5012726-18	air	01/24/15
17	OAM 1 (01/26/15)	5012726-19	air	01/26/15

LDC #: 33647A6
SDG #: 5012726/5012816
Laboratory: Eastern Research Group

VALIDATION COMPLETENESS WORKSHEET

Level IV

Date: 2/4/15
Page: 2 of 2
Reviewer: SD
2nd Reviewer: a

METHOD: (Analyte) Hexavalent Chromium (ASTM D7614)

	Client ID	Lab ID	Matrix	Date
18	OAM 2 (01/26/15)	5012726-20	air	01/26/15
19	PAM-1 (01/26/15)	5012726-21	air	01/26/15
20	PAM-1D (01/26/15)	5012726-22	air	01/26/15
21	PAM-2 (01/26/15)	5012726-23	air	01/26/15
22	PAM-3 (01/26/15)	5012726-24	air	01/26/15
23	PAM-4 (01/26/15)	5012726-25	air	01/26/15
24	PAM-21 (01/26/15)	5012726-26	air	01/26/15
25	PAM-31 (01/26/15)	5012726-27	air	01/26/15
26	OAM 1 (01/27/15)	5012816-01	air	01/27/15
27	OAM 2 (01/27/15)	5012816-02	air	01/27/15
28	PAM-1 (01/27/15)	5012816-03	air	01/27/15
29	PAM-1D (01/27/15)	5012816-04	air	01/27/15
30	PAM-2 (01/27/15)	5012816-05	air	01/27/15
31	PAM-3 (01/27/15)	5012816-06	air	01/27/15
32	PAM-4 (01/27/15)	5012816-07	air	01/27/15
33	PAM-21 (01/27/15)	5012816-08	air	01/27/15
34	PAM-31 (01/27/15)	5012816-09	air	01/27/15
35	PAM-1 (01/23/15)DUP	5012726-03DUP	air	01/23/15
36	PAM-1D (01/23/15)DUP	5012726-04DUP	air	01/23/15
37	PAM-1 (01/24/15)DUP	5012726-12DUP	air	01/24/15
38	PAM-1D (01/24/15)DUP	5012726-13DUP	air	01/24/15
39	PAM-1 (01/26/15)DUP	5012726-21DUP	air	01/26/15
40	PAM-1D (01/26/15)DUP	5012726-22DUP	air	01/26/15
41	PAM-1 (01/27/15)DUP	5012816-03DUP	air	01/27/15
42	PAM-1D (01/27/15)DUP	5012816-04DUP	air	01/27/15
43				
44				
45				

Notes: _____

Method: Inorganics (EPA Method See Level)

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% <u>85-115</u> QC limits?	NA	/		<u>SD</u>
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.			/	
<u>Air</u> 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?			/	

VALIDATION FINDINGS CHECKLIST

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

Inorganics: Method See Cover

Analyte	Concentration (ng/m3)		RPD (≤20)	Qual. (1-6)
	2	3		
Hexavalent Chromium	0.0214	0.0331	43	Jdet/A (det)

Analyte	Concentration (ng/m3)		RPD (≤20)	Qual.
	11	12		
Hexavalent Chromium	0.0461	0.0495	7	

Analyte	Concentration (ng/m3)		RPD (≤20)	Qual.
	19	20		
Hexavalent Chromium	0.0304	0.0333	9	

Analyte	Concentration (ng/m3)		RPD (≤20)	Qual.
	28	29		
Hexavalent Chromium	0.0152	0.0036U	123	NQ

NQ= 1 or both samples <5X MDL

\\LDCFILESERVER\Validation\FIELD DUPLICATES\FD_inorganic\33647A6.wpd

LDC #: 33647A6

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: SD
2nd Reviewer: 9

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	
<u>LCS</u> <u>12:07</u>	Laboratory control sample	<u>Cr⁺⁶</u>	<u>1.115 ng/ml</u>	<u>1.00 ng/ml</u>	<u>112%R</u>	<u>112%R</u>	<u>Y</u>
<u>N</u>	Matrix spike sample		(SSR-SR)				
<u>DUP</u> <u>13:10</u>	Duplicate sample	<u>Cr⁺⁶</u>	<u>0.0225 ng/m³</u>	<u>0.0214 ng/m³</u>	<u>5.01%RPD</u>	<u>5.27%RPD</u>	<u>Y</u>

Comments: _____

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 (3) Cr⁺⁶ reported with a positive detect were recalculated and verified using the following equation:

Concentration = $A - C_0 / C_1$
 $C_0 = -7.77E-06$
 $C_1 = 0.0004023$
 $A = 0.000099$

Recalculation: $\frac{(0.000099 - (-7.77E-06))}{0.0004023} = 0.00088 \text{ ng/ml}$

$\frac{(0.00088 \text{ ng/ml})(10 \text{ ml})}{20.76 \text{ m}^3} = 0.0331 \text{ ng/m}^3$

#	Sample ID	Analyte	Reported Concentration (ng/m ³)	Calculated Concentration (ng/m ³)	Acceptable (Y/N)
	1	Cr ⁺⁶	0.0315	0.0314	Y*
	2		0.0214	0.0214	Y
	3		0.0331	0.0331	Y
	4		0.0284	0.0283	Y*
	5		0.0332	0.0332	Y
	6		0.0402	0.401	Y*
	7		ND	ND	Y
	8		ND	ND	↓
	9		0.0611	0.0612	Y*
	10		0.123	0.123	Y
	11		0.0461	0.0460	Y*
	12		0.0495	0.0495	Y
	13		0.0437	0.0437	↓
	14		0.0651	0.0651	↓
	15		ND	ND	↓
	16		ND	ND	↓
	17		0.0294	0.0293	Y*
	18		0.0561	0.0561	Y
	19		0.0304	0.0304	↓
	20		0.0333	0.0333	↓

Note: _____

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 See pg 1 reported with a positive detect were recalculated and verified using the following equation:

Concentration = _____ Recalculation: _____

#	Sample ID	Analyte	Reported Concentration (ng/m ³)	Calculated Concentration (ng/m ³)	Acceptable (Y/N)
	21	Cr ⁺⁶ ↓	0.0215	0.0214	Y*
	22		0.0216	0.0217	Y*
	23		0.0434	0.0433	Y*
	24		ND	ND	Y
	25		ND	ND	↓
	26		ND	ND	
	27		ND	ND	
	28		0.0152	0.0152	
	29		ND	ND	
	30		ND	ND	
	31		ND	ND	
	32		ND	ND	
	33		ND	ND	
	34		ND	ND	

Note: _____



CERTIFICATE OF ANALYSIS

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FILE #: 3926.00

REPORTED: 02/03/15 13:04

SUBMITTED: 01/27/15 to 01/28/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: OAM 2	Lab ID: 5012726-02	Sampled: 01/23/15 15:52
Matrix: Air	Sample Volume: 21.42 m ³	Received: 01/27/15 15:17
Comments: Start Time 1/22/15 16:04		Analysis Date: 01/28/15 14:59

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0315 <i>J</i>		0.0036

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Initials: *CR*

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REPORTED: 02/03/15 13:04

SUBMITTED: 01/27/15 to 01/28/15

AQS SITE

CODE: Honeywell Hex Chrome Study
SITE CODE:

Description: PAM-1	Lab ID: 5012726-03	Sampled: 01/23/15 17:07
Matrix: Air	Sample Volume: 20.71 m ³	Received: 01/27/15 15:17
Comments: Col 1 Start Time 1/22/15 18:06		Analysis Date: 01/28/15 14:19

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0214 J		0.0036

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REPORTED: 02/03/15 13:04

SUBMITTED: 01/27/15 to 01/28/15

AQS SITE

CODE: Honeywell Hex Chrome Study
SITE CODE:

Description: PAM-1D	Lab ID: 5012726-04	Sampled: 01/23/15 17:21
Matrix: Air	Sample Volume: 20.76 m ³	Received: 01/27/15 15:17
Comments: Col 2 Start Time 1/22/15 18:21		Analysis Date: 01/28/15 17:58

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0331 <i>J</i>		0.0036

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REPORTED: 02/03/15 13:04

SUBMITTED: 01/27/15 to 01/28/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-2	Lab ID: 5012726-05	Sampled: 01/23/15 16:35
Matrix: Air	Sample Volume: 20.7 m ³	Received: 01/27/15 15:17
Comments: Start Time 1/22/15 17:35		Analysis Date: 01/28/15 17:18

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0284 <i>J</i>		0.0036

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SUBMITTED: 01/27/15 to 01/28/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-3	Lab ID: 5012726-06	Sampled: 01/23/15 16:25
Matrix: Air	Sample Volume: 21.03 m ³	Received: 01/27/15 15:17
Comments: Start Time 1/22/15 17:03		Analysis Date: 01/28/15 15:19

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0332 ↻		0.0036

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REPORTED: 02/03/15 13:04

SUBMITTED: 01/27/15 to 01/28/15

AQS SITE

CODE: Honeywell Hex Chrome Study
SITE CODE:

Description: PAM-4	Lab ID: 5012726-07	Sampled: 01/23/15 16:15
Matrix: Air	Sample Volume: 21.22 m ³	Received: 01/27/15 15:17
Comments: Start Time 1/22/15 16:41		Analysis Date: 01/28/15 17:48

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0402	J	0.0036

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Initials: ER

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REPORTED: 02/03/15 13:04

SUBMITTED: 01/27/15 to 01/28/15

AQS SITE

CODE:
SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-21	Lab ID: 5012726-08	Sampled: 01/23/15 00:00
Matrix: Air	Sample Volume: 20.7 m ³	Received: 01/27/15 15:17
Comments:		Analysis Date: 01/28/15 15:38

Hexavalent Chromium by SOP ERG-MOR-063

<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

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REPORTED: 02/03/15 13:04

SUBMITTED: 01/27/15 to 01/28/15

AQS SITE

CODE: Honeywell Hex Chrome Study
SITE CODE:

Description: PAM-31	Lab ID: 5012726-09	Sampled: 01/23/15 00:00
Matrix: Air	Sample Volume: 21.03 m ³	Received: 01/27/15 15:17
Comments:		Analysis Date: 01/28/15 15:48

Hexavalent Chromium by SOP ERG-MOR-063

<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

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FILE #: 3926.00

REPORTED: 02/03/15 13:04

SUBMITTED: 01/27/15 to 01/28/15

AQS SITE

CODE: Honeywell Hex Chrome Study
SITE CODE:

Description: OAM 1	Lab ID: 5012726-10	Sampled: 01/24/15 14:55
Matrix: Air	Sample Volume: 21 m ³	Received: 01/27/15 15:17
Comments: Start Time 1/23/15 15:35		Analysis Date: 01/28/15 15:58

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0611		0.0036

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Initials: *ER*

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FILE #: 3926.00

REPORTED: 02/03/15 13:04

SUBMITTED: 01/27/15 to 01/28/15

AQS SITE

CODE:
SITE CODE:

Honeywell Hex Chrome Study

Description: OAM 2	Lab ID: 5012726-11	Sampled: 01/24/15 15:21
Matrix: Air	Sample Volume: 21.07 m ³	Received: 01/27/15 15:17
Comments: Start Time 1/23/15 15:56		Analysis Date: 01/28/15 16:08

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.123		0.0036

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Initials: *CR*

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FILE #: 3926.00

REPORTED: 02/03/15 13:04

SUBMITTED: 01/27/15 to 01/28/15

AQS SITE

CODE: Honeywell Hex Chrome Study
SITE CODE:

Description: PAM-1	Lab ID: 5012726-12	Sampled: 01/24/15 16:19
Matrix: Air	Sample Volume: 20.83 m ³	Received: 01/27/15 15:17
Comments: Col 1 Start Time 1/23/15 17:10		Analysis Date: 01/28/15 13:39

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0461		0.0036

FEB 05 2015

Initials: *CR*

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FILE #: 3926.00

REPORTED: 02/03/15 13:04

SUBMITTED: 01/27/15 to 01/28/15

AQS SITE

CODE: Honeywell Hex Chrome Study
SITE CODE:

Description: PAM-1D	Lab ID: 5012726-13	Sampled: 01/24/15 16:23
Matrix: Air	Sample Volume: 20.71 m ³	Received: 01/27/15 15:17
Comments: Col 2 Start Time 1/23/15 17:22		Analysis Date: 01/28/15 13:59

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0495		0.0036

FEB 05 2015

Initials: *CR*

Eastern Research Group

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FILE #: 3926.00

REPORTED: 02/03/15 13:04

SUBMITTED: 01/27/15 to 01/28/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-3	Lab ID: 5012726-15	Sampled: 01/24/15 15:52
Matrix: Air	Sample Volume: 21.08 m ³	Received: 01/27/15 15:17
Comments: Start Time 1/23/15 16:27		Analysis Date: 01/28/15 17:37

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0437		0.0036

FEB 05 2015

Initials: CR



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FILE #: 3926.00

REPORTED: 02/03/15 13:04

SUBMITTED: 01/27/15 to 01/28/15

AQS SITE

CODE: Honeywell Hex Chrome Study
SITE CODE:

Description: PAM-4	Lab ID: 5012726-16	Sampled: 01/24/15 15:43
Matrix: Air	Sample Volume: 21.08 m ³	Received: 01/27/15 15:17
Comments: Start Time 1/23/15 16:19		Analysis Date: 01/28/15 16:28

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0651		0.0036

FEB 05 2015

Initials: *ER*

Eastern Research Group

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FILE #: 3926.00

REPORTED: 02/03/15 13:04

SUBMITTED: 01/27/15 to 01/28/15

AQS SITE

CODE: Honeywell Hex Chrome Study
SITE CODE:

Description: PAM-21	Lab ID: 5012726-17	Sampled: 01/24/15 00:00
Matrix: Air	Sample Volume: 21.08 m ³	Received: 01/27/15 15:17
Comments:		Analysis Date: 01/28/15 16:58

Hexavalent Chromium by SOP ERG-MOR-063

<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

FEB 05 2015

Initials: *ER*

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FILE #: 3926.00

REPORTED: 02/03/15 13:04

SUBMITTED: 01/27/15 to 01/28/15

AQS SITE

CODE: Honeywell Hex Chrome Study
SITE CODE:

Description: PAM-31	Lab ID: 5012726-18	Sampled: 01/24/15 00:00
Matrix: Air	Sample Volume: 21.08 m ³	Received: 01/27/15 15:17
Comments:		Analysis Date: 01/28/15 17:08

Hexavalent Chromium by SOP ERG-MOR-063

<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

FEB 05 2015

Initials: *CR*

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: 02/03/15 13:04

SUBMITTED: 01/27/15 to 01/28/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: OAM 1	Lab ID: 5012726-19	Sampled: 01/26/15 15:01
Matrix: Air	Sample Volume: 21.47 m ³	Received: 01/27/15 15:17
Comments: Start Time 1/25/15 15:10		Analysis Date: 01/29/15 14:17

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0294 <i>J</i>	A-01	0.0036

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REPORTED: 02/03/15 13:04

SUBMITTED: 01/27/15 to 01/28/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: OAM 2	Lab ID: 5012726-20	Sampled: 01/26/15 15:24
Matrix: Air	Sample Volume: 21.57 m ³	Received: 01/27/15 15:17
Comments: Start Time 1/25/15 15:26		Analysis Date: 01/29/15 14:27

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0561 <i>J</i>	A-01	0.0036

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REPORTED: 02/03/15 13:04

SUBMITTED: 01/27/15 to 01/28/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1	Lab ID: 5012726-21	Sampled: 01/26/15 16:23
Matrix: Air	Sample Volume: 21.76 m ³	Received: 01/27/15 15:17
Comments: Col 1 Start Time 1/25/15 16:12		Analysis Date: 01/29/15 12:18

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0304		0.0036

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FILE #: 3926.00

REPORTED: 02/03/15 13:04

SUBMITTED: 01/27/15 to 01/28/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1D	Lab ID: 5012726-22	Sampled: 01/26/15 16:27
Matrix: Air	Sample Volume: 21.81 m ³	Received: 01/27/15 15:17
Comments: Col 2 Start Time 1/25/15 16:13		Analysis Date: 01/29/15 12:38

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0333		0.0036

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REPORTED: 02/03/15 13:04

SUBMITTED: 01/27/15 to 01/28/15

AQS SITE

CODE: Honeywell Hex Chrome Study
SITE CODE:

Description: PAM-2	Lab ID: 5012726-23	Sampled: 01/26/15 15:58
Matrix: Air	Sample Volume: 21.52 m ³	Received: 01/27/15 15:17
Comments: Start Time 1/25/15 16:03		Analysis Date: 01/29/15 14:37

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0275 <i>S</i>	A-01	0.0036

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FILE #: 3926.00

REPORTED: 02/03/15 13:04

SUBMITTED: 01/27/15 to 01/28/15

AQS SITE

CODE: Honeywell Hex Chrome Study
SITE CODE:

Description: PAM-3	Lab ID: 5012726-24	Sampled: 01/26/15 15:51
Matrix: Air	Sample Volume: 21.54 m ³	Received: 01/27/15 15:17
Comments: Start Time 1/25/15 15:55		Analysis Date: 01/29/15 14:47

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0216 ⁵	A-01	0.0036

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FILE #: 3926.00

REPORTED: 02/03/15 13:04

SUBMITTED: 01/27/15 to 01/28/15

AQS SITE

CODE:
SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-4	Lab ID: 5012726-25	Sampled: 01/26/15 15:43
Matrix: Air	Sample Volume: 21.58 m ³	Received: 01/27/15 15:17
Comments: Start Time 1/25/15 15:44		Analysis Date: 01/29/15 17:06

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0434 <i>S</i>	A-01	0.0036

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FILE #: 3926.00

REPORTED: 02/03/15 13:04

SUBMITTED: 01/27/15 to 01/28/15

AQS SITE

CODE: Honeywell Hex Chrome Study
SITE CODE:

Description: PAM-21	Lab ID: 5012726-26	Sampled: 01/26/15 00:00
Matrix: Air	Sample Volume: 21.52 m ³	Received: 01/27/15 15:17
Comments:		Analysis Date: 01/29/15 15:07

Hexavalent Chromium by SOP ERG-MOR-063

<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

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Initials: *CR*

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

FILE #: 3926.00
REPORTED: 02/03/15 13:04
SUBMITTED: 01/27/15 to 01/28/15

ATTN: Mr. Jeff Boggs

AQS SITE
CODE:
SITE CODE: Honeywell Hex Chrome Study

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

Description: PAM-31	Lab ID: 5012726-27	Sampled: 01/26/15 00:00
Matrix: Air	Sample Volume: 21.54 m ³	Received: 01/27/15 15:17
Comments:		Analysis Date: 01/29/15 15:17

Hexavalent Chromium by SOP ERG-MOR-063

<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

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Initials: *CR*

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FILE #: 3926.00

REPORTED: 02/03/15 13:04

SUBMITTED: 01/27/15 to 01/28/15

AQS SITE

CODE: Honeywell Hex Chrome Study
SITE CODE:

Description: OAM 1	Lab ID: 5012816-01	Sampled: 01/27/15 14:51
Matrix: Air	Sample Volume: 21.4 m ³	Received: 01/28/15 10:38
Comments: Start Time 1/26/15 15:04		Analysis Date: 01/29/15 15:27

Hexavalent Chromium by SOP ERG-MOR-063

<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

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Initials: *CR*

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FILE #: 3926.00

REPORTED: 02/03/15 13:04

SUBMITTED: 01/27/15 to 01/28/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: OAM 2

Lab ID: 5012816-02

Sampled: 01/27/15 15:25

Matrix: Air

Sample Volume: 21.58 m³

Received: 01/28/15 10:38

Comments: Start Time 1/26/15 15:27

Analysis Date: 01/29/15 15:37

Hexavalent Chromium by SOP ERG-MOR-063

<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

FEB 05 2015

Initials: ER

Eastern Research Group

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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: 02/03/15 13:04

SUBMITTED: 01/27/15 to 01/28/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-1	Lab ID: 5012816-03	Sampled: 01/27/15 16:23
Matrix: Air	Sample Volume: 21.54 m ³	Received: 01/28/15 10:38
Comments: Col 1 Start Time 1/26/15 16:27		Analysis Date: 01/29/15 12:57

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0152		0.0036

FEB 05 2015

Initials: *ER*

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: 02/03/15 13:04

SUBMITTED: 01/27/15 to 01/28/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1D	Lab ID: 5012816-04	Sampled: 01/27/15 16:26
Matrix: Air	Sample Volume: 21.54 m ³	Received: 01/28/15 10:38
Comments: Col 2 Start Time 1/26/15 16:30		Analysis Date: 01/29/15 13:17

Hexavalent Chromium by SOP ERG-MOR-063

<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

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FILE #: 3926.00

REPORTED: 02/03/15 13:04

SUBMITTED: 01/27/15 to 01/28/15

AQS SITE

CODE: Honeywell Hex Chrome Study
SITE CODE:

Description: PAM-2	Lab ID: 5012816-05	Sampled: 01/27/15 16:08
Matrix: Air	Sample Volume: 21.69 m ³	Received: 01/28/15 10:38
Comments: Start Time 1/26/15 16:01		Analysis Date: 01/29/15 15:46

Hexavalent Chromium by SOP ERG-MOR-063

<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

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FILE #: 3926.00

REPORTED: 02/03/15 13:04

SUBMITTED: 01/27/15 to 01/28/15

AQS SITE

CODE: Honeywell Hex Chrome Study
SITE CODE:

Description: PAM-3	Lab ID: 5012816-06	Sampled: 01/27/15 15:56
Matrix: Air	Sample Volume: 21.65 m ³	Received: 01/28/15 10:38
Comments: Start Time 1/26/15 15:53		Analysis Date: 01/29/15 16:16

Hexavalent Chromium by SOP ERG-MOR-063

<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

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FILE #: 3926.00

REPORTED: 02/03/15 13:04

SUBMITTED: 01/27/15 to 01/28/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-4	Lab ID: 5012816-07	Sampled: 01/27/15 15:48
Matrix: Air	Sample Volume: 21.62 m ³	Received: 01/28/15 10:38
Comments: Start Time 1/26/15 15:47		Analysis Date: 01/29/15 16:26

Hexavalent Chromium by SOP ERG-MOR-063

<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

FEB 05 2015

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FILE #: 3926.00

REPORTED: 02/03/15 13:04

SUBMITTED: 01/27/15 to 01/28/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-21

Lab ID: 5012816-08

Sampled: 01/27/15 00:00

Matrix: Air

Sample Volume: 21.69 m³

Received: 01/28/15 10:38

Comments:

Analysis Date: 01/29/15 16:36

Hexavalent Chromium by SOP ERG-MOR-063

<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

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FILE #: 3926.00

REPORTED: 02/03/15 13:04

SUBMITTED: 01/27/15 to 01/28/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-31	Lab ID: 5012816-09	Sampled: 01/27/15 00:00
Matrix: Air	Sample Volume: 21.65 m ³	Received: 01/28/15 10:38
Comments:		Analysis Date: 01/29/15 16:46

Hexavalent Chromium by SOP ERG-MOR-063

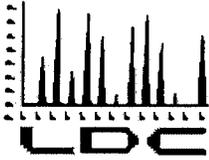
<u>Analyte</u>	<u>CAS Number</u>	<u>Results</u> ng/m ³ Air	<u>Flag</u>	<u>MDL</u> ng/m ³ Air
Hexavalent Chromium	1854-02-99	ND	U	0.0036

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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

February 18, 2015

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

Dear Mr. Boggs,

Enclosed is the final validation report for the fraction listed below. This SDG was received on February 17, 2015. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #33735:

SDG

Fraction

5012917/5013009

Hexavalent Chromium

The data validation was performed under EPA Level IV guidelines. The analyses were validated using the following documents, as applicable to each method:

- Air Monitoring Program Quality Assurance Project Plan, Area 1, Phase 1 Development, Version 1, Baltimore Works Site, Baltimore, Maryland, March 2014
- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, January 2010

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: January 28 through January 29, 2015
LDC Report Date: February 17, 2015
Matrix: Air
Parameters: Hexavalent Chromium
Validation Level: EPA Level IV
Laboratory: Eastern Research Group
Sample Delivery Group (SDG): 5012917/5013009

Sample Identification

OAM 1(01/28/15)	PAM-1(01/29/15)DUP
OAM 2(01/28/15)	PAM-1D(01/29/15)DUP
PAM-1(01/28/15)	
PAM-1D(01/28/15)	
PAM-2(01/28/15)	
PAM-3(01/28/15)	
PAM-4(01/28/15)	
PAM-21(01/28/15)	
PAM-31(01/28/15)	
OAM 1(01/29/15)	
OAM 2(01/29/15)	
PAM-1(01/29/15)	
PAM-1D(01/29/15)	
PAM-2(01/29/15)	
PAM-3(01/29/15)	
PAM-4(01/29/15)	
PAM-21(01/29/15)	
PAM-31(01/29/15)	
PAM-1(01/28/15)DUP	
PAM-1D(01/28/15)DUP	

The date was appended to the sample ID to differentiate between samples.

Introduction

This data review covers 22 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.
- 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. Continuing Calibration

Continuing calibration 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(1/28/15) and PAM-31(1/29/15) were identified as trip blanks. No hexavalent chromium was found.

Samples PAM-21(1/28/15) and PAM-21(1/29/15) were identified as field blanks. No hexavalent chromium was found.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analysis was not required by the method.

VI. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results 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(1/28/15) and PAM-1D (1/28/15) and samples PAM-1(1/29/15) and PAM-1D (1/29/15) 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(1/28/15)	PAM-1D (1/28/15)			
Hexavalent chromium	0.0180	0.0181	1 (≤20)	-	-

Analyte	Concentration (ng/m ³)		RPD (Limits)	Flags	A or P
	PAM-1(1/29/15)	PAM-1D (1/29/15)			
Hexavalent chromium	0.0305	0.0335	9 (≤20)	-	-

**Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Data Qualification Summary - SDG 5012917/5013009**

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

**Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG
5012917/5013009**

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
5012917/5013009**

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

LDC #: 33735A6

VALIDATION COMPLETENESS WORKSHEET

Date: 2/17/15

SDG #: 5012917/5013009

Level IV

Page: 1 of 2

Laboratory: Eastern Research Group

Reviewer: SD2nd Reviewer: OR**METHOD: (Analyte) 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.	Sample receipt/Technical holding times	A	1/28-29/15
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	A	
V	Field blanks	ND	FB=(8)(17) TB=(9)(18)
VI.	Matrix Spike/Matrix Spike Duplicates	N	Not Required
VII.	Duplicate sample analysis	A	DUP
VIII.	Laboratory control samples	A	LCS10
IX.	Field duplicates	SW	FD=(3,4) (12,13)
X.	Sample result verification	A	
XI.	Overall assessment of data	A	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

SB=Source blank
OTHER:

	Client ID	Lab ID	Matrix	Date
1	OAM 1(01/28/15)	5012917-01	Air	01/28/15
2	OAM 2(01/28/15)	5012917-02	Air	01/28/15
3	PAM-1(01/28/15)	5012917-03	Air	01/28/15
4	PAM-1D(01/28/15)	5012917-04	Air	01/28/15
5	PAM-2(01/28/15)	5012917-05	Air	01/28/15
6	PAM-3(01/28/15)	5012917-06	Air	01/28/15
7	PAM-4(01/28/15)	5012917-07	Air	01/28/15
8	PAM-21(01/28/15)	5012917-08	Air	01/28/15
9	PAM-31(01/28/15)	5012917-09	Air	01/28/15
10	OAM 1(01/29/15)	5013009-01	Air	01/29/15
11	OAM 2(01/29/15)	5013009-02	Air	01/29/15
12	PAM-1(01/29/15)	5013009-03	Air	01/29/15
13	PAM-1D(01/29/15)	5013009-04	Air	01/29/15
14	PAM-2(01/29/15)	5013009-05	Air	01/29/15
15	PAM-3(01/29/15)	5013009-06	Air	01/29/15
16	PAM-4(01/29/15)	5013009-07	Air	01/29/15
17	PAM-21(01/29/15)	5013009-08	Air	01/29/15

LDC #: 33735A6

VALIDATION COMPLETENESS WORKSHEET

SDG #: 5012917/5013009

Level IV

Laboratory: Eastern Research Group

Date: 2/17/15

Page: 2 of 2

Reviewer: [Signature]

2nd Reviewer: [Signature]

METHOD: (Analyte) Hexavalent Chromium (ASTM D7614)

	Client ID	Lab ID	Matrix	Date
18	PAM-31(01/29/15)	5013009-09	Air	01/29/15
19	PAM-1(01/28/15)DUP	5012917-03DUP	Air	01/28/15
20	PAM-1D(01/28/15)DUP	5012917-04DUP	Air	01/28/15
21	PAM-1(01/29/15)DUP	5013009-03DUP	Air	01/29/15
22	PAM-1D(01/29/15)DUP	5013009-04DUP	Air	01/29/15
23				
24				
25				
26				
27				

Notes: _____

Method: Inorganics (EPA Method See Cover)

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% <u>85-115</u> 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.			/	
<u>Ans</u> 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 #: 35735A0

VALIDATION FINDINGS CHECKLIST

Page: 2 of 2
 Reviewer: SD
 2nd Reviewer: CL

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.		/		

LDC# 33735A6

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: SD
2nd Reviewer: ea

Inorganics: Method See Cover

Analyte	Concentration (ng/m3)		RPD (≤ 20)	Qual.
	3	4		
Hexavalent Chromium	0.0180	0.0181	1	

Analyte	Concentration (ng/m3)		RPD (≤ 20)	Qual.
	12	13		
Hexavalent Chromium	0.0305	0.0335	9	

\\LDCFILESERVER\Validation\FIELD DUPLICATES\FD_inorganic\33735A6.wpd

LDC #: 3573510

Validation Findings Worksheet
Initial and Continuing Calibration Calculation Verification

Page: 1 of 1
 Reviewer: SD
 2nd Reviewer: G

Method: Inorganics, Method See Cover

The correlation coefficient (r) for the calibration of C²⁺ was recalculated. Calibration date: 2/04/15

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. (ng/ml)	Area	Recalculated	Reported	Acceptable (Y/N)
					r or r ²	r or r ²	
Initial calibration	C ²⁺	s1	0.05	0.0000135	0.99999	0.99999	Y
		s2	0.1	0.0000325			
		s3	0.2	0.0000712			
		s4	0.5	0.0001971			
		s5	1	0.0004004			
		s6	2	0.0008047			
ICV 10:56 Calibration verification	C ²⁺	$\frac{\text{Found}}{0.526 \text{ ng/ml}}$	$\frac{\text{True}}{0.5 \text{ ng/ml}}$		105.2%R	105.2%R	Y
CCV 11:56 Calibration verification	C ²⁺	0.540 ng/ml	0.5 ng/ml		108.0%R	108.0%R	
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 #: 33735 A10

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: SD
2nd Reviewer: Q

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 11:20	Laboratory control sample	Cr ⁺⁶	1.048 ng/ml	1.00 ng/ml	105%R	105%R	Y
N	Matrix spike sample		(SSR-SR)				
DUP 13:45	Duplicate sample	Cr ⁺⁶	0.0166 ng/ml ³	0.0180 ng/ml ³	8.09%RPD	8.02%RPD	Y

Comments: _____

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 (4) Cr⁺⁶ reported with a positive detect were recalculated and verified using the following equation:

Concentration = $(A - C_0) / C_1$ $V_f = 10 \text{ ml}$ $m^3 = 21.57$ $(\text{ng/ml}) / (\text{ml}) / \text{m}^3 = \text{ng/m}^3$ Recalculation: $\frac{(0.0000082 - (-7.66E-06))}{30 \cdot 0.000466} = 0.0390 \text{ ng/ml}$
 $A = 0.0000082$
 $C_0 = -7.66E-06$
 $C_1 = 0.000466$
 $\frac{(0.0390 \text{ ng/ml}) (10 \text{ ml})}{21.57 \text{ m}^3} = 0.0181 \text{ ng/m}^3$

#	Sample ID	Analyte	Reported Concentration (ng/m ³)	Calculated Concentration (ng/m ³)	Acceptable (Y/N)	
	1	Cr ⁺⁶	0.0170	0.0169	Y*	
	2		0.0129	0.0129	Y	
	3		0.0180	0.0180	↓	
	4		0.0181	0.0181		
	5		0.0487	0.0487		
	6		ND	ND		
	7		0.0233	0.0232		Y*
	8		ND	ND		Y
	9		ND	ND		
	10		0.0213	0.0213		
	11		0.0233	0.0233		
	12		0.0305	0.0305		
	13		0.0335	0.0335		
	14		0.0396	0.0396		
	15		0.0288	0.0288		
	16		0.0343	0.0343		
	17		ND	ND		
	18		ND	ND		Y

Note: *Rounding



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: 02/06/15 11:27

SUBMITTED: 01/29/15 to 01/30/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: OAM 1	Lab ID: 5012917-01	Sampled: 01/28/15 14:52
Matrix: Air	Sample Volume: 21.57 m ³	Received: 01/29/15 11:45
Comments: Start Time 1/27/15 14:54		Analysis Date: 02/04/15 14:16

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0170		0.0036

FEB 18 2015

Initials: *CR*

Eastern Research Group

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REPORTED: 02/06/15 11:27

SUBMITTED: 01/29/15 to 01/30/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: OAM 2

Lab ID: 5012917-02

Sampled: 01/28/15 15:18

Matrix: Air

Sample Volume: 21.43 m³

Received: 01/29/15 11:45

Comments: Start Time 1/27/15 15:29

Analysis Date: 02/04/15 14:26

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0129		0.0036

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REPORTED: 02/06/15 11:27

SUBMITTED: 01/29/15 to 01/30/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-1	Lab ID: 5012917-03	Sampled: 01/28/15 16:23
Matrix: Air	Sample Volume: 21.56 m ³	Received: 01/29/15 11:45
Comments: Col 1 Start Time 1/27/15 16:26		Analysis Date: 02/04/15 13:35

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0180		0.0036

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REPORTED: 02/06/15 11:27

SUBMITTED: 01/29/15 to 01/30/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-1D	Lab ID: 5012917-04	Sampled: 01/28/15 16:27
Matrix: Air	Sample Volume: 21.57 m ³	Received: 01/29/15 11:45
Comments: Col 2 Start Time 1/27/15 16:28		Analysis Date: 02/04/15 17:35

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0181		0.0036

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FILE #: 3926.00

REPORTED: 02/06/15 11:27

SUBMITTED: 01/29/15 to 01/30/15

AQS SITE

CODE: Honeywell Hex Chrome Study
SITE CODE:

Description: PAM-2	Lab ID: 5012917-05	Sampled: 01/28/15 15:58
Matrix: Air	Sample Volume: 21.39 m ³	Received: 01/29/15 11:45
Comments: Start Time 1/27/15 16:12		Analysis Date: 02/04/15 16:55

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0487		0.0036

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REPORTED: 02/06/15 11:27

SUBMITTED: 01/29/15 to 01/30/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-3

Lab ID: 5012917-06

Sampled: 01/28/15 15:52

Matrix: Air

Sample Volume: 21.5 m³

Received: 01/29/15 11:45

Comments: Start Time 1/27/15 15:59

Analysis Date: 02/04/15 14:46

Hexavalent Chromium by SOP ERG-MOR-063

<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

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Initials: *ER*

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REPORTED: 02/06/15 11:27

SUBMITTED: 01/29/15 to 01/30/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-4

Lab ID: 5012917-07

Sampled: 01/28/15 15:42

Matrix: Air

Sample Volume: 21.46 m³

Received: 01/29/15 11:45

Comments: Start Time 1/27/15 15:51

Analysis Date: 02/04/15 17:05

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0233		0.0036

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Initials: *ER*

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FILE #: 3926.00

REPORTED: 02/06/15 11:27

SUBMITTED: 01/29/15 to 01/30/15

AQS SITE

CODE: SITE CODE: Honeywell Hex Chrome Study

Description: PAM-21

Lab ID: 5012917-08

Sampled: 01/28/15 00:00

Matrix: Air

Sample Volume: 21.39 m³

Received: 01/29/15 11:45

Comments:

Analysis Date: 02/04/15 15:06

Hexavalent Chromium by SOP ERG-MOR-063

<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

FEB 18 2015

Initials: *ER*

Eastern Research Group

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FILE #: 3926.00

REPORTED: 02/06/15 11:27

SUBMITTED: 01/29/15 to 01/30/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-31

Lab ID: 5012917-09

Sampled: 01/28/15 00:00

Matrix: Air

Sample Volume: 21.5 m³

Received: 01/29/15 11:45

Comments:

Analysis Date: 02/04/15 15:16

Hexavalent Chromium by SOP ERG-MOR-063

<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

FEB 18 2015

Initials: *CR*

Eastern Research Group

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FILE #: 3926.00

REPORTED: 02/06/15 11:27

SUBMITTED: 01/29/15 to 01/30/15

AQS SITE

CODE: Honeywell Hex Chrome Study
SITE CODE:

Description: OAM 1	Lab ID: 5013009-01	Sampled: 01/29/15 14:58
Matrix: Air	Sample Volume: 21.65 m ³	Received: 01/30/15 10:43
Comments: Start Time 1/28/15 14:55		Analysis Date: 02/04/15 17:15

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0273		0.0036

FEB 18 2015

Initials: *ER*

Eastern Research Group

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FILE #: 3926.00

REPORTED: 02/06/15 11:27

SUBMITTED: 01/29/15 to 01/30/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: OAM 2

Lab ID: 5013009-02

Sampled: 01/29/15 15:22

Matrix: Air

Sample Volume: 21.61 m³

Received: 01/30/15 10:43

Comments: Start Time 1/28/15 15:21

Analysis Date: 02/04/15 17:25

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0233		0.0036

FEB 18 2015

Initials: *CR*

Eastern Research Group

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CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

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PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 02/06/15 11:27

SUBMITTED: 01/29/15 to 01/30/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-1	Lab ID: 5013009-03	Sampled: 01/29/15 16:09
Matrix: Air	Sample Volume: 21.35 m ³	Received: 01/30/15 10:43
Comments: Col 1 Start Time 1/28/15 16:26		Analysis Date: 02/04/15 12:56

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0305		0.0036

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Initials: *ER*

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REPORTED: 02/06/15 11:27

SUBMITTED: 01/29/15 to 01/30/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-1D	Lab ID: 5013009-04	Sampled: 01/29/15 16:12
Matrix: Air	Sample Volume: 21.34 m ³	Received: 01/30/15 10:43
Comments: Col 2 Start Time 1/28/15 16:29		Analysis Date: 02/04/15 13:16

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0335		0.0036

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REPORTED: 02/06/15 11:27

SUBMITTED: 01/29/15 to 01/30/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-2

Lab ID: 5013009-05

Sampled: 01/29/15 15:58

Matrix: Air

Sample Volume: 21.52 m³

Received: 01/30/15 10:43

Comments: Start Time 1/28/15 16:03

Analysis Date: 02/04/15 15:46

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0396		0.0036

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FILE #: 3926.00

REPORTED: 02/06/15 11:27

SUBMITTED: 01/29/15 to 01/30/15

AQS SITE

CODE: Honeywell Hex Chrome Study
SITE CODE:

Description: PAM-3	Lab ID: 5013009-06	Sampled: 01/29/15 15:51
Matrix: Air	Sample Volume: 21.54 m ³	Received: 01/30/15 10:43
Comments: Start Time 1/28/15 15:55		Analysis Date: 02/04/15 16:15

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0288		0.0036

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Initials: ER

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FILE #: 3926.00

REPORTED: 02/06/15 11:27

SUBMITTED: 01/29/15 to 01/30/15

AQS SITE

CODE: Honeywell Hex Chrome Study
SITE CODE:

Description: PAM-4	Lab ID: 5013009-07	Sampled: 01/29/15 15:43
Matrix: Air	Sample Volume: 21.57 m ³	Received: 01/30/15 10:43
Comments: Start Time 1/28/15 15:44 Flow rate out of acceptance. Please analyze per		Analysis Date: 02/04/15 16:25

Hexavalent Chromium by SOP ERG-MOR-063

<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	0.0343		0.0036

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REPORTED: 02/06/15 11:27

SUBMITTED: 01/29/15 to 01/30/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-21

Lab ID: 5013009-08

Sampled: 01/29/15 00:00

Matrix: Air

Sample Volume: 21.52 m³

Received: 01/30/15 10:43

Comments:

Analysis Date: 02/04/15 16:35

Hexavalent Chromium by SOP ERG-MOR-063

<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

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REPORTED: 02/06/15 11:27

SUBMITTED: 01/29/15 to 01/30/15

AQS SITE

CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description: PAM-31

Lab ID: 5013009-09

Sampled: 01/29/15 00:00

Matrix: Air

Sample Volume: 21.54 m³

Received: 01/30/15 10:43

Comments:

Analysis Date: 02/04/15 16:45

Hexavalent Chromium by SOP ERG-MOR-063

<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

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