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

July 14, 2014

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 July 11, 2014. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #32145:

SDG	Fraction
4070836/7070922	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

198 pages-SF 3 DAY TAT

Attachment 1

Level IV	LDC #32145 (ERM - Morrisville, NC / Harbor Point, MD, Hexavalent Chromium Monitoring)																																						
LDC	SDG#	DATE REC'D	(3) DATE DUE	Cr(VI) (D7614)																																			
Matrix:	Air/Water/Soil			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	W	S	W	S
A	4070836/7070922	07/11/14	07/16/14	35	0																																		
Total	A/CR			35	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	0	0	0	0	35

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

32145ST.wpd

LDC Report# 32145A6

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Harbor Point, MD, Hexavalent Chromium Monitoring

Collection Date: July 2 through July 8, 2014

LDC Report Date: July 14, 2014

Matrix: Air

Parameters: Hexavalent Chromium

Validation Level: EPA Level IV

Laboratory: Eastern Research Group

Sample Delivery Group (SDG): 4070836/4070922

Sample Identification

OAM 1 (07/02/14)
OAM 2 (07/02/14)
PAM-1 (07/02/14)
PAM-1D (07/02/14)
PAM-2 (07/02/14)
PAM-3 (07/02/14)
PAM-4 (07/02/14)
PAM-21 (07/02/14)
PAM-31 (07/02/14)
OAM 1 (07/03/14)
OAM 2 (07/03/14)
PAM-1 (07/03/14)
PAM-1D (07/03/14)
PAM-3 (07/03/14)
PAM-4 (07/03/14)
PAM-21 (07/03/14)
PAM-31 (07/03/14)
OAM 1 (07/07/14)
OAM2 (07/07/14)
PAM-1 (07/07/14)
PAM-1D (07/07/14)
PAM-2 (07/07/14)
PAM-3 (07/07/14)
PAM-4 (07/07/14)
PAM-21 (07/07/14)
PAM-31 (07/07/14)
OAM 1 (07/08/14)
OAM 2 (07/08/14)
PAM-1 (07/08/14)
PAM-1D (07/08/14)
PAM-2 (07/08/14)
PAM-3 (07/08/14)
PAM-4 (07/08/14)
PAM-21 (07/08/14)
PAM-31 (07/08/14)
PAM-1 (07/02/14)DUP
PAM-1D (07/02/14)DUP
PAM-1 (07/03/14)DUP
PAM-1D (07/03/14)DUP
PAM-1 (07/07/14)DUP
PAM-1D (07/07/14)DUP
PAM-1 (07/08/14)DUP
PAM-1D (07/08/14)DUP

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 (07/02/14), PAM-31 (07/03/14), PAM-31 (07/07/14), and PAM-31 (07/08/14) were identified as trip blanks. No hexavalent chromium was found.

Samples PAM-21 (07/02/14), PAM-21 (07/03/14), PAM-21 (07/07/14), and PAM-21 (07/08/14) 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 (07/02/14) and PAM-1D (07/02/14), samples PAM-1 (07/03/14) and PAM-1D (07/03/14), samples PAM-1 (07/07/14) and PAM-1D (07/07/14), and samples PAM-1 (07/08/14) and PAM-1D (07/08/14) were identified as field duplicates. No hexavalent chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (ng/m^3)		RPD (Limits)	Flags	A or P
	PAM-1 (07/02/14)	PAM-1D (07/02/14)			
Hexavalent chromium	0.0626	0.0679	8 (≤20)	-	-

Analyte	Concentration (ng/m^3)		RPD (Limits)	Flags	A or P
	PAM-1 (07/03/14)	PAM-1D (07/03/14)			
Hexavalent chromium	0.108	0.0948	13 (≤20)	-	-

Analyte	Concentration (ng/m^3)		RPD (Limits)	Flags	A or P
	PAM-1 (07/07/14)	PAM-1D (07/07/14)			
Hexavalent chromium	0.0648	0.0741	13 (≤20)	-	-

Analyte	Concentration (ng/m^3)		RPD (Limits)	Flags	A or P
	PAM-1 (07/08/14)	PAM-1D (07/08/14)			
Hexavalent chromium	0.0402	0.0541	29 (≤20)	J (all detects)	A

Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Data Qualification Summary - SDG 4070836/4070922

SDG	Sample	Analyte	Flag	A or P	Reason
4070836/ 4070922	PAM-1 (07/08/14) PAM-1D (07/08/14)	Hexavalent chromium	J (all detects)	A	Field duplicates (RPD)

Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG 4070836/4070922

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 4070836/4070922

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

LDC #: 32145A6 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/11/14
SDG #: 4070836/4070922 Level IV Page: 1 of 1
Laboratory: Eastern Research Group Reviewer: JD
2nd Reviewer: AL

METHOD: Hexavalent Chromium (ASTM D7614)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 07/02-03/14, 7/07-08/14
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Blanks	A	
V	Matrix Spike/Matrix Spike Duplicates	N	
VI.	Duplicates	A	Dup
VII.	Laboratory control samples	A	LCS/D
VIII.	Sample result verification	A	
IX.	Overall assessment of data	A	
X.	Field duplicates	SW	FD= (3,4) (12,13) (20,21) (29,36)
XI	Field blanks	ND	~~EB=~~ FB= 8,16,25,34 TB= 9,17,26,35

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

Validated Samples: air

1	OAM 1 (07/02/14)	12	PAM-1 (07/03/14)	23	PAM-3 (07/07/14)	34	PAM-21 (07/08/14)
2	OAM 2 (07/02/14)	13	PAM-1D (07/03/14)	24	PAM-4 (07/07/14)	35	PAM-31 (07/08/14)
3	PAM-1 (07/02/14)	14	PAM-3 (07/03/14)	25	PAM-21 (07/07/14)	36	PAM-1 (07/02/14)DUP
4	PAM-1D (07/02/14)	15	PAM-4 (07/03/14)	26	PAM-31 (07/07/14)	37	PAM-1D (07/02/14)DUP
5	PAM-2 (07/02/14)	16	PAM-21 (07/03/14)	27	OAM 1 (07/08/14)	38	PAM-1 (07/03/14)DUP
6	PAM-3 (07/02/14)	17	PAM-31 (07/03/14)	28	OAM 2 (07/08/14)	39	PAM-1D (07/03/14)DUP
7	PAM-4 (07/02/14)	18	OAM 1 (07/07/14)	29	PAM-1 (07/08/14)	40	PAM-1 (07/07/14)DUP
8	PAM-21 (07/02/14)	19	OAM2 (07/07/14)	30	PAM-1D (07/08/14)	41	PAM-1D (07/07/14)DUP
9	PAM-31 (07/02/14)	20	PAM-1 (07/07/14)	31	PAM-2 (07/08/14)	42	PAM-1 (07/08/14)DUP
10	OAM 1 (07/03/14)	21	PAM-1D (07/07/14)	32	PAM-3 (07/08/14)	43	PAM-1D (07/08/14)DUP
11	OAM 2 (07/03/14)	22	PAM-2 (07/07/14)	33	PAM-4 (07/08/14)	44	

Notes: IDs appended to differentiate between samples

LDC #: 32145A6

VALIDATION FINDINGS CHECKLIST

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

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%~~ 85-115 QC limits?	✓			
Were titrant checks performed as required? (Level IV only)			✓	
Were balance checks performed as required? (Level IV only)			✓	
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. Matrix spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			DUP
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.			✓	
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for ~~waters~~ and ≤ 35% for soil samples? A control limit of ≤ CRDL(≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were ≤ 5X the CRDL.	✓			Air
V. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

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

LDC# 32145A6

VALIDATION FINDINGS WORKSHEET

Field Duplicates

Reviewer: JD
2nd Reviewer: [illegible]

Inorganics: Method See Cover

Analyte	Concentration (ng/m3)		RPD (≤20)	
	3	4		
Hexavalent Chromium	0.0626	0.0679	8	

Analyte	Concentration (ng/m3)		RPD (≤20)	
	12	13		
Hexavalent Chromium	0.108	0.0948	13	

Analyte	Concentration (ng/m3)		RPD (≤20)	
	20	21		
Hexavalent Chromium	0.0648	0.0741	13	

Analyte	Concentration (ng/m3)		RPD (≤20)	
	29	30		
Hexavalent Chromium	0.0402	0.0541	29	Jdets/A

\\LDCFILESERVER\Validation\FIELD DUPLICATES\FD_inorganic\32145A6.wpd

LDC #: 32145A6

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: 7/9/14

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

%R = Found X 100 / 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 r or r^2	Reported r or r^2	Acceptable (Y/N)
Initial calibration	Cr^{+6}	s1	0.05	0.0000106	*0.99980*	0.99936	y
		s2	0.10	0.0000306			
		s3	0.20	0.0000683			
		s4	0.50	0.0001791			
		s5	1.00	0.0003623			
		s6	2.00	0.0007623			
ICV 10:16 7/9/14 Calibration verification	Cr^{+6}	Found 0.5198ng/ml	True 0.5000ng/ml		104.0%R	104.0%R	y
ICV 10:11 7/10/14 Calibration verification	Cr^{+6}	0.5143ng/ml	0.5000ng/ml		102.9%R	102.9%R	y
CCV ~~11:31~~ 11:11 7/10/14 Calibration verification	Cr^{+6}	0.5581	0.5000ng/ml		111.6%R	111.7%R	y

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 #: 32145A0

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

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

METHOD: Inorganics, Method See Lower

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

%R = Found / True x 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 = |S-D| / (S+D)/2 x 100 Where, S = Original sample concentration
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated %R / RPD	Reported %R / RPD	Acceptable (Y/N)
LCS 10:46 7/9/14	Laboratory control sample	Cr+6	1.109 ng/ml	1.00ng/ml	111%R	111%R	y
N	Matrix spike sample		(SSR-SR)				
Dup 12:07 7/9/14	Duplicate sample	Cr+6	0.0710 ng/m3	0.0679 ng/m3	4.46%RPD	4.59%RPD	y

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

LDC #: 32145A6

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 2
Reviewer: SD
2nd reviewer: [illegible]

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

Concentration = $\frac{[(Area) - (Co)]}{(Ci)}$ ng/ml

Co = -6.64E-06
Ci = 0.0003993
Area = 0.0002235 mAU*min

Vf = 10ml
m^3 = 20.91

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

Recalculation: $\frac{[(0.0002235 mAU*min) - (-6.64E-06)]}{(0.0003993)} = 0.576 ng/l$

$\frac{(0.576 ng/ml)(10 ml)}{20.91 m^3} = 0.276 ng/l$

#	Sample ID	Analyte	Reported Concentration (ng/m^3)	Calculated Concentration (ng/m^3)	Acceptable (Y/N)
	1	Cr+6	0.0365	0.0364	Y
	2		0.0319	0.318	
	3		0.0626	0.0626	
	4		0.0679	0.0679	
	5		0.0795	0.0794	
	6		0.0846	0.0846	
	7		0.293	0.293	
	8		ND	ND	
	9		ND	ND	
	10		0.0382	0.038	
	11		0.0586	0.0585	
	12		0.108	0.108	
	13		0.0948	0.0948	
	14		0.0662	0.0662	
	15		0.0786	0.0786	
	16		ND	ND	
	17		ND	ND	
	18		0.0224	0.0225	
	19		0.0367	0.0367	
	20		0.0648	0.0648	

Note:

LDC #: 32145A6

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: 3D
2nd reviewer: CL

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 _____ reported with a positive detect were recalculated and verified using the following equation:

Concentration =

Recalculation:

See previous pg

#	Sample ID	Analyte	Reported Concentration (ng/m^3)	Calculated Concentration (ng/m^3)	Acceptable (Y/N)
	21	Cr^{+6}	0.0741	~~0.0741~~ 0.0741	Y
	22		0.0602	0.0601	
	23		0.313	0.313	
	24		0.0505	0.0505	
	25		ND	ND	
	26		ND	ND	
	27		0.0263	0.0264	
	28		0.0248	0.0248	
	29		0.0402	0.0403	
	30		0.0541	0.0541	
	31		0.0335	0.0336	
	32		0.0271	0.0272	
	33		0.276	0.276	
	34		ND	ND	
	35		ND	ND	

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: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: OAM 1 **Lab ID:** 4070836-01 **Sampled:** 07/02/14 15:54
Matrix: Air **Sample Volume:** 21.39 m^3 **Received:** 07/08/14 11:06
Comments: Start Time 7/1/14 16:08 **Analysis Date:** 07/09/14 12:58

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0365		0.0036

CR 7/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: OAM 2 **Lab ID:** 4070836-02 **Sampled:** 07/02/14 16:18
Matrix: Air **Sample Volume:** 21.41 m^3 **Received:** 07/08/14 11:06
Comments: Start Time 7/1/14 16:30 **Analysis Date:** 07/09/14 13:08

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0319		0.0036

07/11/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1 **Lab ID:** 4070836-03 **Sampled:** 07/02/14 17:24
Matrix: Air **Sample Volume:** 21.35 m^3 **Received:** 07/08/14 11:06
Comments: Col 1 Start Time 7/1/14 17:41 **Analysis Date:** 07/09/14 11:37

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0626		0.0036

07/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1D **Lab ID:** 4070836-04 **Sampled:** 07/02/14 17:27
Matrix: Air **Sample Volume:** 21.31 m^3 **Received:** 07/08/14 11:06
Comments: Col 2 Start Time 7/1/14 17:46 **Analysis Date:** 07/09/14 11:57

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0679		0.0036

07/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-2 **Lab ID:** 4070836-05 **Sampled:** 07/02/14 17:09
Matrix: Air **Sample Volume:** 21.42 m^3 **Received:** 07/08/14 11:06
Comments: Start Time 7/1/14 17:21 **Analysis Date:** 07/09/14 13:38

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0795		0.0036

07/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-3 **Lab ID:** 4070836-06 **Sampled:** 07/02/14 16:56
Matrix: Air **Sample Volume:** 21.38 m^3 **Received:** 07/08/14 11:06
Comments: Start Time 7/1/14 17:11 **Analysis Date:** 07/09/14 13:48

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0846		0.0036

02/11/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-4 **Lab ID:** 4070836-07 **Sampled:** 07/02/14 16:37
Matrix: Air **Sample Volume:** 21.38 m^3 **Received:** 07/08/14 11:06
Comments: Start Time 7/1/14 16:52 **Analysis Date:** 07/09/14 13:58

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.293		0.0036

07/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-21 **Lab ID:** 4070836-08 **Sampled:** 07/02/14 00:00
Matrix: Air **Sample Volume:** 21.42 m^3 **Received:** 07/08/14 11:06
Comments: **Analysis Date:** 07/09/14 14:08

Hexavalent Chromium

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

07/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-31 **Lab ID:** 4070836-09 **Sampled:** 07/02/14 00:00
Matrix: Air **Sample Volume:** 21.38 m^3 **Received:** 07/08/14 11:06
Comments: **Analysis Date:** 07/09/14 14:18

Hexavalent Chromium

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

07/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: OAM 1 **Lab ID:** 4070836-10 **Sampled:** 07/03/14 15:26
Matrix: Air **Sample Volume:** 21.11 m^3 **Received:** 07/08/14 11:06
Comments: Start Time 7/2/14 15:59 **Analysis Date:** 07/09/14 14:28

Hexavalent Chromium

Analyte	CAS Number	Results ng/m^3 Air	Flag	MDL ng/m^3 Air
Hexavalent Chromium	1854-02-99	0.0382		0.0036

07/11/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: OAM 2 **Lab ID:** 4070836-11 **Sampled:** 07/03/14 15:58
Matrix: Air **Sample Volume:** 21.23 m^3 **Received:** 07/08/14 11:06
Comments: Start Time 7/2/14 16:23 **Analysis Date:** 07/09/14 14:37

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0586		0.0036

07/11/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1 **Lab ID:** 4070836-12 **Sampled:** 07/03/14 16:58
Matrix: Air **Sample Volume:** 21.15 m^3 **Received:** 07/08/14 11:06
Comments: Col 1 Start Time 7/2/14 17:28 **Analysis Date:** 07/09/14 12:17

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.108		0.0036

7/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1D **Lab ID:** 4070836-13 **Sampled:** 07/03/14 17:02
Matrix: Air **Sample Volume:** 21.17 m^3 **Received:** 07/08/14 11:06
Comments: Col 2 Start Time 7/2/14 17:31 **Analysis Date:** 07/09/14 12:36

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0948		0.0036

07/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-3 **Lab ID:** 4070836-14 **Sampled:** 07/03/14 16:37
Matrix: Air **Sample Volume:** 21.14 m^3 **Received:** 07/08/14 11:06
Comments: Start Time 7/2/14 17:01 **Analysis Date:** 07/09/14 14:47

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0662		0.0036

07/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-4 **Lab ID:** 4070836-15 **Sampled:** 07/03/14 16:21
Matrix: Air **Sample Volume:** 21.28 m^3 **Received:** 07/08/14 11:06
Comments: Start Time 7/2/14 16:42 **Analysis Date:** 07/09/14 14:57

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0786		0.0036

07/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-21 **Lab ID:** 4070836-16 **Sampled:** 07/03/14 00:00
Matrix: Air **Sample Volume:** 21.14 m^3 **Received:** 07/08/14 11:06
Comments: **Analysis Date:** 07/09/14 15:07

Hexavalent Chromium

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

07/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-31 **Lab ID:** 4070836-17 **Sampled:** 07/03/14 00:00
Matrix: Air **Sample Volume:** 21.14 m^3 **Received:** 07/08/14 11:06
Comments: **Analysis Date:** 07/09/14 15:37

Hexavalent Chromium

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

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: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: OAM 1 **Lab ID:** 4070836-18 **Sampled:** 07/07/14 15:55
Matrix: Air **Sample Volume:** 21.01 m^3 **Received:** 07/08/14 11:06
Comments: Start Time 7/6/14 16:35 **Analysis Date:** 07/10/14 12:52

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0224		0.0036

07/11/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: OAM 2 **Lab ID:** 4070836-19 **Sampled:** 07/07/14 16:19
Matrix: Air **Sample Volume:** 21.04 m^3 **Received:** 07/08/14 11:06
Comments: Start Time 7/6/14 16:57 **Analysis Date:** 07/10/14 13:01

Hexavalent Chromium

Analyte	CAS Number	Results ng/m^3 Air	Flag	MDL ng/m^3 Air
Hexavalent Chromium	1854-02-99	0.0367		0.0036

07/11/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1 **Lab ID:** 4070836-20 **Sampled:** 07/07/14 17:35
Matrix: Air **Sample Volume:** 21.81 m^3 **Received:** 07/08/14 11:06
Comments: Col 1 Start Time 7/6/14 17:21 **Analysis Date:** 07/10/14 11:31

Hexavalent Chromium

Analyte	CAS Number	Results ng/m^3 Air	Flag	MDL ng/m^3 Air
Hexavalent Chromium	1854-02-99	0.0648		0.0036

07/11/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1D **Lab ID:** 4070836-21 **Sampled:** 07/07/14 17:39
Matrix: Air **Sample Volume:** 21.83 m^3 **Received:** 07/08/14 11:06
Comments: Col 2 Start Time 7/6/14 17:24 **Analysis Date:** 07/10/14 11:51

Hexavalent Chromium

Analyte	CAS Number	Results ng/m^3 Air	Flag	MDL ng/m^3 Air
Hexavalent Chromium	1854-02-99	0.0741		0.0036

07/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-2 **Lab ID:** 4070836-22 **Sampled:** 07/07/14 16:41
Matrix: Air **Sample Volume:** 20.84 m^3 **Received:** 07/08/14 11:06
Comments: Start Time 7/6/14 17:31 **Analysis Date:** 07/10/14 13:31

Hexavalent Chromium

Analyte	CAS Number	Results ng/m^3 Air	Flag	MDL ng/m^3 Air
Hexavalent Chromium	1854-02-99	0.0602		0.0036

07/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-3 **Lab ID:** 4070836-23 **Sampled:** 07/07/14 17:01
Matrix: Air **Sample Volume:** 20.9 m^3 **Received:** 07/08/14 11:06
Comments: Start Time 7/6/14 18:03 **Analysis Date:** 07/10/14 13:41

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.313		0.0036

07/11/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-4 **Lab ID:** 4070836-24 **Sampled:** 07/07/14 17:15
Matrix: Air **Sample Volume:** 20.88 m^3 **Received:** 07/08/14 11:06
Comments: Start Time 7/6/14 17:48 **Analysis Date:** 07/10/14 13:51

Hexavalent Chromium

Analyte	CAS Number	Results ng/m^3 Air	Flag	MDL ng/m^3 Air
Hexavalent Chromium	1854-02-99	0.0505		0.0036

07/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-21 **Lab ID:** 4070836-25 **Sampled:** 07/07/14 00:00
Matrix: Air **Sample Volume:** 20.84 m^3 **Received:** 07/08/14 11:06
Comments: **Analysis Date:** 07/10/14 14:01

Hexavalent Chromium

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

07/11/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-31 **Lab ID:** 4070836-26 **Sampled:** 07/07/14 00:00
Matrix: Air **Sample Volume:** 20.9 m^3 **Received:** 07/08/14 11:06
Comments: **Analysis Date:** 07/10/14 14:11

Hexavalent Chromium

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

07/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: OAM 1 **Lab ID:** 4070922-01 **Sampled:** 07/08/14 15:48
Matrix: Air **Sample Volume:** 21.41 m^3 **Received:** 07/09/14 11:34
Comments: Start Time 7/7/14 16:01 **Analysis Date:** 07/10/14 14:21

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0263		0.0036

7/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: OAM 2 **Lab ID:** 4070922-02 **Sampled:** 07/08/14 16:10
Matrix: Air **Sample Volume:** 21.39 m^3 **Received:** 07/09/14 11:34
Comments: Start Time 7/7/14 16:24 **Analysis Date:** 07/10/14 14:31

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0248		0.0036

07/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1 **Lab ID:** 4070922-03 **Sampled:** 07/08/14 17:20
Matrix: Air **Sample Volume:** 21.3 m^3 **Received:** 07/09/14 11:34
Comments: Col 1 Start Time 7/7/14 17:40 **Analysis Date:** 07/10/14 12:11

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0402 J		0.0036

07/11/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1D **Lab ID:** 4070922-04 **Sampled:** 07/08/14 17:26
Matrix: Air **Sample Volume:** 21.34 m^3 **Received:** 07/09/14 11:34
Comments: Col 2 Start Time 7/7/14 17:43 **Analysis Date:** 07/10/14 12:30

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0541 J	D-F	0.0036

07/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-2 **Lab ID:** 4070922-05 **Sampled:** 07/08/14 16:59
Matrix: Air **Sample Volume:** 21.79 m^3 **Received:** 07/09/14 11:34
Comments: Start Time 7/7/14 16:45 **Analysis Date:** 07/10/14 14:41

Hexavalent Chromium

Analyte	CAS Number	Results ng/m^3 Air	Flag	MDL ng/m^3 Air
Hexavalent Chromium	1854-02-99	0.0335		0.0036

07/11/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-3 **Lab ID:** 4070922-06 **Sampled:** 07/08/14 16:49
Matrix: Air **Sample Volume:** 21.34 m^3 **Received:** 07/09/14 11:34
Comments: Start Time 7/7/14 17:06 **Analysis Date:** 07/10/14 14:50

Hexavalent Chromium

Analyte	CAS Number	Results ng/m^3 Air	Flag	MDL ng/m^3 Air
Hexavalent Chromium	1854-02-99	0.0271		0.0036

07/11/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-4 **Lab ID:** 4070922-07 **Sampled:** 07/08/14 16:31
Matrix: Air **Sample Volume:** 20.91 m^3 **Received:** 07/09/14 11:34
Comments: Start Time 7/7/14 17:17 **Analysis Date:** 07/10/14 15:00

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.276		0.0036

07/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-21 **Lab ID:** 4070922-08 **Sampled:** 07/08/14 00:00
Matrix: Air **Sample Volume:** 21.79 m^3 **Received:** 07/09/14 11:34
Comments: **Analysis Date:** 07/10/14 15:30

Hexavalent Chromium

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

07/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-31 **Lab ID:** 4070922-09 **Sampled:** 07/08/14 00:00
Matrix: Air **Sample Volume:** 21.34 m^3 **Received:** 07/09/14 11:34
Comments: **Analysis Date:** 07/10/14 15:40

Hexavalent Chromium

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

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

July 28, 2014

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 #32145:

SDG	Fraction
4070836/7070922	Hexavalent Chromium

- Per client request, the field duplicate qualifier association was changed to qualify all samples >5x the MDL on the date of the exceeded field duplicate set.

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: July 2 through July 8, 2014

LDC Report Date: July 25, 2014

Matrix: Air

Parameters: Hexavalent Chromium

Validation Level: EPA Level IV

Laboratory: Eastern Research Group

Sample Delivery Group (SDG): 4070836/4070922

Sample Identification

OAM 1 (07/02/14)
OAM 2 (07/02/14)
PAM-1 (07/02/14)
PAM-1D (07/02/14)
PAM-2 (07/02/14)
PAM-3 (07/02/14)
PAM-4 (07/02/14)
PAM-21 (07/02/14)
PAM-31 (07/02/14)
OAM 1 (07/03/14)
OAM 2 (07/03/14)
PAM-1 (07/03/14)
PAM-1D (07/03/14)
PAM-3 (07/03/14)
PAM-4 (07/03/14)
PAM-21 (07/03/14)
PAM-31 (07/03/14)
OAM 1 (07/07/14)
OAM2 (07/07/14)
PAM-1 (07/07/14)
PAM-1D (07/07/14)
PAM-2 (07/07/14)
PAM-3 (07/07/14)
PAM-4 (07/07/14)
PAM-21 (07/07/14)
PAM-31 (07/07/14)
OAM 1 (07/08/14)
OAM 2 (07/08/14)
PAM-1 (07/08/14)
PAM-1D (07/08/14)
PAM-2 (07/08/14)
PAM-3 (07/08/14)
PAM-4 (07/08/14)
PAM-21 (07/08/14)
PAM-31 (07/08/14)
PAM-1 (07/02/14)DUP
PAM-1D (07/02/14)DUP
PAM-1 (07/03/14)DUP
PAM-1D (07/03/14)DUP
PAM-1 (07/07/14)DUP
PAM-1D (07/07/14)DUP
PAM-1 (07/08/14)DUP
PAM-1D (07/08/14)DUP

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 (07/02/14), PAM-31 (07/03/14), PAM-31 (07/07/14), and PAM-31 (07/08/14) were identified as trip blanks. No hexavalent chromium was found.

Samples PAM-21 (07/02/14), PAM-21 (07/03/14), PAM-21 (07/07/14), and PAM-21 (07/08/14) 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 (07/02/14) and PAM-1D (07/02/14), samples PAM-1 (07/03/14) and PAM-1D (07/03/14), samples PAM-1 (07/07/14) and PAM-1D (07/07/14), and samples PAM-1 (07/08/14) and PAM-1D (07/08/14) were identified as field duplicates. No hexavalent chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (ng/m^3)		RPD (Limits)	Flags	A or P
	PAM-1 (07/02/14)	PAM-1D (07/02/14)			
Hexavalent chromium	0.0626	0.0679	8 (≤20)	-	-

Analyte	Concentration (ng/m^3)		RPD (Limits)	Flags	A or P
	PAM-1 (07/03/14)	PAM-1D (07/03/14)			
Hexavalent chromium	0.108	0.0948	13 (≤20)	-	-

Analyte	Concentration (ng/m^3)		RPD (Limits)	Flags	A or P
	PAM-1 (07/07/14)	PAM-1D (07/07/14)			
Hexavalent chromium	0.0648	0.0741	13 (≤20)	-	-

Analyte	Concentration (ng/m^3)		RPD (Limits)	Flags	A or P
	PAM-1 (07/08/14)	PAM-1D (07/08/14)			
Hexavalent chromium	0.0402	0.0541	29 (≤20)	J (all detects)	A

Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Data Qualification Summary - SDG 4070836/4070922

SDG	Sample	Analyte	Flag	A or P	Reason
4070836/ 4070922	OAM 1 (07/08/14) OAM 2 (07/08/14) PAM-1 (07/08/14) PAM-1D (07/08/14) PAM-2 (07/08/14) PAM-3 (07/08/14) PAM-4 (07/08/14)	Hexavalent chromium	J (all detects)	A	Field duplicates (RPD)

Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG 4070836/4070922

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 4070836/4070922

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

LDC #: 32145A6 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/11/14
SDG #: 4070836/4070922 Level IV Page: 1 of 1
Laboratory: Eastern Research Group Reviewer: JD
2nd Reviewer: dL

METHOD: Hexavalent Chromium (ASTM D7614)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 07/02-03/14, 7/07-08/14
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Blanks	A	
V	Matrix Spike/Matrix Spike Duplicates	N	
VI.	Duplicates	A	Dup
VII.	Laboratory control samples	A	LCS/D
VIII.	Sample result verification	A	
IX.	Overall assessment of data	A	
X.	Field duplicates	SW	FD= (3,4) (12,13) (20,21) (29,36)
XI	Field blanks	ND	~~EB=~~ FB= 8,16,25,34 TB= 9,17,26,35

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

Validated Samples: air

1	OAM 1 (07/02/14)	12	PAM-1 (07/03/14)	23	PAM-3 (07/07/14)	34	PAM-21 (07/08/14)
2	OAM 2 (07/02/14)	13	PAM-1D (07/03/14)	24	PAM-4 (07/07/14)	35	PAM-31 (07/08/14)
3	PAM-1 (07/02/14)	14	PAM-3 (07/03/14)	25	PAM-21 (07/07/14)	36	PAM-1 (07/02/14)DUP
4	PAM-1D (07/02/14)	15	PAM-4 (07/03/14)	26	PAM-31 (07/07/14)	37	PAM-1D (07/02/14)DUP
5	PAM-2 (07/02/14)	16	PAM-21 (07/03/14)	27	OAM 1 (07/08/14)	38	PAM-1 (07/03/14)DUP
6	PAM-3 (07/02/14)	17	PAM-31 (07/03/14)	28	OAM 2 (07/08/14)	39	PAM-1D (07/03/14)DUP
7	PAM-4 (07/02/14)	18	OAM 1 (07/07/14)	29	PAM-1 (07/08/14)	40	PAM-1 (07/07/14)DUP
8	PAM-21 (07/02/14)	19	OAM2 (07/07/14)	30	PAM-1D (07/08/14)	41	PAM-1D (07/07/14)DUP
9	PAM-31 (07/02/14)	20	PAM-1 (07/07/14)	31	PAM-2 (07/08/14)	42	PAM-1 (07/08/14)DUP
10	OAM 1 (07/03/14)	21	PAM-1D (07/07/14)	32	PAM-3 (07/08/14)	43	PAM-1D (07/08/14)DUP
11	OAM 2 (07/03/14)	22	PAM-2 (07/07/14)	33	PAM-4 (07/08/14)	44	

Notes: IDs appended to differentiate between samples

LDC #: 32145A6

VALIDATION FINDINGS CHECKLIST

Reviewer: SD
2nd Reviewer: AC

Method: Inorganics (EPA Method Selen)

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 ~~80-110%~~ 85-115 QC limits?	✓			
Were titrant checks performed as required? (Level IV only)			✓	
Were balance checks performed as required? (Level IV only)			✓	
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. Matrix spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			DUP
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.			✓	
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for ~~waters~~ and ≤ 35% for soil samples? A control limit of ≤ CRDL(≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were < 5X the CRDL.	✓			
V. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

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

LDC# 32145A6

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: SD
2nd Reviewer: QR

Inorganics: Method See Cover

Analyte	Concentration (ng/m3)		RPD (≤20)	
	3	4		
Hexavalent Chromium	0.0626	0.0679	8	

Analyte	Concentration (ng/m3)		RPD (≤20)	
	12	13		
Hexavalent Chromium	0.108	0.0948	13	

Analyte	Concentration (ng/m3)		RPD (≤20)	
	20	21		
Hexavalent Chromium	0.0648	0.0741	13	

Analyte	Concentration (ng/m3)		RPD (≤20)	
	29	30		
Hexavalent Chromium	0.0402	0.0541	29	Jdet/A J/UJA-Qr

\\LDCFILESERVER\Validation\FIELD DUPLICATES\FD_inorganic\32145A6.wpd

(qualify 27-33)

LDC #: 32145A6

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: 7/9/14

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

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

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

Type of analysis	Analyte	Standard	Conc. (ng/ml)	Area	Recalculated r or r^2	Reported r or r^2	Acceptable (Y/N)
Initial calibration	Cr^{+6}	s1	0.05	0.0000106	*0.99980*	0.99936	y
		s2	0.10	0.0000306			
		s3	0.20	0.0000683			
		s4	0.50	0.0001791			
		s5	1.00	0.0003623			
		s6	2.00	0.0007623			
ICV 10:16 7/9/14 Calibration verification	Cr^{+6}	Found 0.5198ng/ml	True 0.5000ng/ml		104.0%R	104.0%R	y
ICV 10:11 7/10/14 Calibration verification	Cr^{+6}	0.5143ng/ml	0.5000ng/ml		102.9%R	102.9%R	y
CCV ~~11:31~~ 11:11 7/10/14 Calibration verification	Cr^{+6}	0.5581	0.5000ng/ml		111.6%R	111.7%R	y

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 #: 32145A0

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Reviewer: SD
2nd Reviewer: E

METHOD: Inorganics, Method See Lower

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

$\%R = \frac{Found}{True} \times 100$ 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 %R / RPD	Reported %R / RPD	Acceptable (Y/N)
LCS 10:46 7/9/14	Laboratory control sample	Cr+6	1.109 ng/ml	1.00 ng/ml	111 %R	111 %R	y
N	Matrix spike sample		(SSR-SR)				
Dup 12:07 7/9/14	Duplicate sample	Cr+6	0.0710 ng/m3	0.0679 ng/m3	4.46% RPD	4.59% RPD	y

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

LDC #: 32145A6

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 2
Reviewer: SD
2nd reviewer: [illegible]

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

Concentration = $\frac{[(area) - (Co)]}{(C_1)}$ ng/ml

$Co = -6.64E-06$

$C_1 = 0.0003993$

$Area = 0.0002235 mAU*min$

Vf = 10ml
$m^3 = 20.91$

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

Recalculation: $\frac{[(0.0002235 mAU*min) - (-6.64E-06)]}{(0.0003993)} = 0.576 ng$

$\frac{(0.576 ng/ml)(10 ml)}{20.91 m^3} = 0.276 ng/$

#	Sample ID	Analyte	Reported Concentration (ng/m³)	Calculated Concentration (ng/m³)	Acceptable (Y/N)
	1	Cr^{+6}	0.0365	0.0364	Y
	2		0.0319	0.318	
	3		0.0626	0.0626	
	4		0.0679	0.0679	
	5		0.0795	0.0794	
	6		0.0846	0.0846	
	7		0.293	0.293	
	8		ND	ND	
	9		ND	ND	
	10		0.0382	0.038	
	11		0.0586	0.0585	
	12		0.108	0.108	
	13		0.0948	0.0948	
	14		0.0662	0.0662	
	15		0.0786	0.0786	
	16		ND	ND	
	17		ND	ND	
	18		0.0224	0.0225	
	19		0.0367	0.0367	
	20		0.0648	0.0648	

Note:

LDC #: 32145A6

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: SD
2nd reviewer: CL

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 _____ reported with a positive detect were recalculated and verified using the following equation:

Concentration =

Recalculations:
see previous pdf

#	Sample ID	Analyte	Reported Concentration (ng/m³)	Calculated Concentration (ng/m³)	Acceptable (Y/N)
	21	Cr^{+6}	0.0741	~~0.0741~~	Y
	22		0.0602	0.0601	
	23		0.313	0.313	
	24		0.0505	0.0505	
	25		ND	ND	
	26		ND	ND	
	27		0.0263	0.0264	
	28		0.0248	0.0248	
	29		0.0402	0.0403	
	30		0.0541	0.0541	
	31		0.0335	0.0336	
	32		0.0271	0.0272	
	33		0.276	0.276	
	34		ND	ND	
	35		ND	ND	

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: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: OAM 1 **Lab ID:** 4070836-01 **Sampled:** 07/02/14 15:54
Matrix: Air **Sample Volume:** 21.39 m^3 **Received:** 07/08/14 11:06
Comments: Start Time 7/1/14 16:08 **Analysis Date:** 07/09/14 12:58

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0365		0.0036

7/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: OAM 2 **Lab ID:** 4070836-02 **Sampled:** 07/02/14 16:18
Matrix: Air **Sample Volume:** 21.41 m^3 **Received:** 07/08/14 11:06
Comments: Start Time 7/1/14 16:30 **Analysis Date:** 07/09/14 13:08

Hexavalent Chromium

Analyte	CAS Number	Results ng/m^3 Air	Flag	MDL ng/m^3 Air
Hexavalent Chromium	1854-02-99	0.0319		0.0036

07/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1 **Lab ID:** 4070836-03 **Sampled:** 07/02/14 17:24
Matrix: Air **Sample Volume:** 21.35 m^3 **Received:** 07/08/14 11:06
Comments: Col 1 Start Time 7/1/14 17:41 **Analysis Date:** 07/09/14 11:37

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0626		0.0036

07/11/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1D **Lab ID:** 4070836-04 **Sampled:** 07/02/14 17:27
Matrix: Air **Sample Volume:** 21.31 m^3 **Received:** 07/08/14 11:06
Comments: Col 2 Start Time 7/1/14 17:46 **Analysis Date:** 07/09/14 11:57

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0679		0.0036

07/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-2 **Lab ID:** 4070836-05 **Sampled:** 07/02/14 17:09
Matrix: Air **Sample Volume:** 21.42 m^3 **Received:** 07/08/14 11:06
Comments: Start Time 7/1/14 17:21 **Analysis Date:** 07/09/14 13:38

Hexavalent Chromium

Analyte	CAS Number	Results ng/m^3 Air	Flag	MDL ng/m^3 Air
Hexavalent Chromium	1854-02-99	0.0795		0.0036

07/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-3 **Lab ID:** 4070836-06 **Sampled:** 07/02/14 16:56
Matrix: Air **Sample Volume:** 21.38 m^3 **Received:** 07/08/14 11:06
Comments: Start Time 7/1/14 17:11 **Analysis Date:** 07/09/14 13:48

Hexavalent Chromium

Analyte	CAS Number	Results ng/m^3 Air	Flag	MDL ng/m^3 Air
Hexavalent Chromium	1854-02-99	0.0846		0.0036

02/7/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-4 **Lab ID:** 4070836-07 **Sampled:** 07/02/14 16:37
Matrix: Air **Sample Volume:** 21.38 m^3 **Received:** 07/08/14 11:06
Comments: Start Time 7/1/14 16:52 **Analysis Date:** 07/09/14 13:58

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.293		0.0036

07/11/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-21 **Lab ID:** 4070836-08 **Sampled:** 07/02/14 00:00
Matrix: Air **Sample Volume:** 21.42 m^3 **Received:** 07/08/14 11:06
Comments: **Analysis Date:** 07/09/14 14:08

Hexavalent Chromium

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

07/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-31 **Lab ID:** 4070836-09 **Sampled:** 07/02/14 00:00
Matrix: Air **Sample Volume:** 21.38 m^3 **Received:** 07/08/14 11:06
Comments: **Analysis Date:** 07/09/14 14:18

Hexavalent Chromium

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

07/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: OAM 1 **Lab ID:** 4070836-10 **Sampled:** 07/03/14 15:26
Matrix: Air **Sample Volume:** 21.11 m^3 **Received:** 07/08/14 11:06
Comments: Start Time 7/2/14 15:59 **Analysis Date:** 07/09/14 14:28

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0382		0.0036

07/11/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: OAM 2 **Lab ID:** 4070836-11 **Sampled:** 07/03/14 15:58
Matrix: Air **Sample Volume:** 21.23 m^3 **Received:** 07/08/14 11:06
Comments: Start Time 7/2/14 16:23 **Analysis Date:** 07/09/14 14:37

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0586		0.0036

07/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1 **Lab ID:** 4070836-12 **Sampled:** 07/03/14 16:58
Matrix: Air **Sample Volume:** 21.15 m^3 **Received:** 07/08/14 11:06
Comments: Col 1 Start Time 7/2/14 17:28 **Analysis Date:** 07/09/14 12:17

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.108		0.0036

SR 7/11/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1D **Lab ID:** 4070836-13 **Sampled:** 07/03/14 17:02
Matrix: Air **Sample Volume:** 21.17 m^3 **Received:** 07/08/14 11:06
Comments: Col 2 Start Time 7/2/14 17:31 **Analysis Date:** 07/09/14 12:36

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0948		0.0036

07/11/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-3 **Lab ID:** 4070836-14 **Sampled:** 07/03/14 16:37
Matrix: Air **Sample Volume:** 21.14 m^3 **Received:** 07/08/14 11:06
Comments: Start Time 7/2/14 17:01 **Analysis Date:** 07/09/14 14:47

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0662		0.0036

07/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-4 **Lab ID:** 4070836-15 **Sampled:** 07/03/14 16:21
Matrix: Air **Sample Volume:** 21.28 m^3 **Received:** 07/08/14 11:06
Comments: Start Time 7/2/14 16:42 **Analysis Date:** 07/09/14 14:57

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0786		0.0036

07/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-21 **Lab ID:** 4070836-16 **Sampled:** 07/03/14 00:00
Matrix: Air **Sample Volume:** 21.14 m^3 **Received:** 07/08/14 11:06
Comments: **Analysis Date:** 07/09/14 15:07

Hexavalent Chromium

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

07/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-31 **Lab ID:** 4070836-17 **Sampled:** 07/03/14 00:00
Matrix: Air **Sample Volume:** 21.14 m^3 **Received:** 07/08/14 11:06
Comments: **Analysis Date:** 07/09/14 15:37

Hexavalent Chromium

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

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: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: OAM 1 **Lab ID:** 4070836-18 **Sampled:** 07/07/14 15:55
Matrix: Air **Sample Volume:** 21.01 m^3 **Received:** 07/08/14 11:06
Comments: Start Time 7/6/14 16:35 **Analysis Date:** 07/10/14 12:52

Hexavalent Chromium

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

07/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: OAM 2 **Lab ID:** 4070836-19 **Sampled:** 07/07/14 16:19
Matrix: Air **Sample Volume:** 21.04 m^3 **Received:** 07/08/14 11:06
Comments: Start Time 7/6/14 16:57 **Analysis Date:** 07/10/14 13:01

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0367		0.0036

07/11/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1 **Lab ID:** 4070836-20 **Sampled:** 07/07/14 17:35
Matrix: Air **Sample Volume:** 21.81 m^3 **Received:** 07/08/14 11:06
Comments: Col 1 Start Time 7/6/14 17:21 **Analysis Date:** 07/10/14 11:31

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0648		0.0036

07/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1D
Matrix: Air
Comments: Col 2 Start Time 7/6/14 17:24

Lab ID: 4070836-21
Sample Volume: 21.83 m^3

Sampled: 07/07/14 17:39
Received: 07/08/14 11:06
Analysis Date: 07/10/14 11:51

Hexavalent Chromium

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

07/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-2 **Lab ID:** 4070836-22 **Sampled:** 07/07/14 16:41
Matrix: Air **Sample Volume:** 20.84 m^3 **Received:** 07/08/14 11:06
Comments: Start Time 7/6/14 17:31 **Analysis Date:** 07/10/14 13:31

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0602		0.0036

07/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-3 **Lab ID:** 4070836-23 **Sampled:** 07/07/14 17:01
Matrix: Air **Sample Volume:** 20.9 m^3 **Received:** 07/08/14 11:06
Comments: Start Time 7/6/14 18:03 **Analysis Date:** 07/10/14 13:41

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.313		0.0036

07/11/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-4 **Lab ID:** 4070836-24 **Sampled:** 07/07/14 17:15
Matrix: Air **Sample Volume:** 20.88 m^3 **Received:** 07/08/14 11:06
Comments: Start Time 7/6/14 17:48 **Analysis Date:** 07/10/14 13:51

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0505		0.0036

07/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-21 **Lab ID:** 4070836-25 **Sampled:** 07/07/14 00:00
Matrix: Air **Sample Volume:** 20.84 m^3 **Received:** 07/08/14 11:06
Comments: **Analysis Date:** 07/10/14 14:01

Hexavalent Chromium

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

07/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-31 **Lab ID:** 4070836-26 **Sampled:** 07/07/14 00:00
Matrix: Air **Sample Volume:** 20.9 m^3 **Received:** 07/08/14 11:06
Comments: **Analysis Date:** 07/10/14 14:11

Hexavalent Chromium

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

07/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: OAM 1 **Lab ID:** 4070922-01 **Sampled:** 07/08/14 15:48
Matrix: Air **Sample Volume:** 21.41 m^3 **Received:** 07/09/14 11:34
Comments: Start Time 7/7/14 16:01 **Analysis Date:** 07/10/14 14:21

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0263	J	0.0036

7/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: OAM 2 **Lab ID:** 4070922-02 **Sampled:** 07/08/14 16:10
Matrix: Air **Sample Volume:** 21.39 m^3 **Received:** 07/09/14 11:34
Comments: Start Time 7/7/14 16:24 **Analysis Date:** 07/10/14 14:31

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0248	J	0.0036

07/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1 **Lab ID:** 4070922-03 **Sampled:** 07/08/14 17:20
Matrix: Air **Sample Volume:** 21.3 m^3 **Received:** 07/09/14 11:34
Comments: Col 1 Start Time 7/7/14 17:40 **Analysis Date:** 07/10/14 12:11

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0402 J		0.0036

07/11/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1D **Lab ID:** 4070922-04 **Sampled:** 07/08/14 17:26
Matrix: Air **Sample Volume:** 21.34 m^3 **Received:** 07/09/14 11:34
Comments: Col 2 Start Time 7/7/14 17:43 **Analysis Date:** 07/10/14 12:30

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0541 J	D-F	0.0036

07/11/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-2 **Lab ID:** 4070922-05 **Sampled:** 07/08/14 16:59
Matrix: Air **Sample Volume:** 21.79 m^3 **Received:** 07/09/14 11:34
Comments: Start Time 7/7/14 16:45 **Analysis Date:** 07/10/14 14:41

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0335 J		0.0036

07/11/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-3 **Lab ID:** 4070922-06 **Sampled:** 07/08/14 16:49
Matrix: Air **Sample Volume:** 21.34 m^3 **Received:** 07/09/14 11:34
Comments: Start Time 7/7/14 17:06 **Analysis Date:** 07/10/14 14:50

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0271 J		0.0036

07/11/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-4 **Lab ID:** 4070922-07 **Sampled:** 07/08/14 16:31
Matrix: Air **Sample Volume:** 20.91 m^3 **Received:** 07/09/14 11:34
Comments: Start Time 7/7/14 17:17 **Analysis Date:** 07/10/14 15:00

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.276	J	0.0036

07/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-21 **Lab ID:** 4070922-08 **Sampled:** 07/08/14 00:00
Matrix: Air **Sample Volume:** 21.79 m^3 **Received:** 07/09/14 11:34
Comments: **Analysis Date:** 07/10/14 15:30

Hexavalent Chromium

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

07/14/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/11/14 12:48
SUBMITTED: 07/08/14 to 07/09/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-31 **Lab ID:** 4070922-09 **Sampled:** 07/08/14 00:00
Matrix: Air **Sample Volume:** 21.34 m^3 **Received:** 07/09/14 11:34
Comments: **Analysis Date:** 07/10/14 15:40

Hexavalent Chromium

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

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

July 16, 2014

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 July 15, 2014. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #32172:

SDG	Fraction
4071006	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

64 pages-SF 3 DAY TAT Attachment 1

Level IV

LDC #32172 (ERM - Morrisville, NC / Harbor Point, MD, Hexavalent Chromium Monitoring)

LDC	SDG#	DATE REC'D	(3) DATE DUE	Cr(VI) (D7614)																																	
Matrix:	Air/Water/Soil			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	W	S
A	4071006	07/15/14	07/18/14	8	0																																
Total	A/CR			8	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	0	0	8

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: July 9, 2014

LDC Report Date: July 16, 2014

Matrix: Air

Parameters: Hexavalent Chromium

Validation Level: EPA Level IV

Laboratory: Eastern Research Group

Sample Delivery Group (SDG): 4071006

Sample Identification

OAM 1
OAM 2
PAM-1
PAM-1D
PAM-3
PAM-4
PAM-21
PAM-31
PAM-1DUP
PAM-1DDUP

Introduction

This data review covers 10 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 was identified as a trip blank. No hexavalent chromium was found.

Sample PAM-21 was identified as a field blank. 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 and PAM-1D 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	PAM-1D			
Hexavalent chromium	0.0676	0.0682	1 (≤20)	-	-

Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Data Qualification Summary - SDG 4071006

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

Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG 4071006

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 4071006

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

LDC #: 32172A6
SDG #: 4071006
Laboratory: Eastern Research Group

VALIDATION COMPLETENESS WORKSHEET
Level IV

Date: 7/16/14
Page: 1 of 1
Reviewer: AL
2nd Reviewer: SM

METHOD: Hexavalent Chromium (ASTM D7614)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 7/9/14
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Blanks	A	
V	Matrix Spike/Matrix Spike Duplicates	N	Not required
VI.	Duplicates	A	DP
VII.	Laboratory control samples	A	LCS/D
VIII.	Sample result verification	A	
IX.	Overall assessment of data	A	
X.	Field duplicates	SW	(3,4)
XI	Field blanks	ND	FB=8 TB=9

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

Validated Samples: air

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

Notes: _____

LDC #: 32472A6

VALIDATION FINDINGS CHECKLIST

Reviewer: CR
2nd Reviewer: SW

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~~ 85-115% QC limits?	✓			
Were titrant checks performed as required? (Level IV only)			—	
Were balance checks performed as required? (Level IV only)			✓	
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. Matrix spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			Dup only
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.			✓	
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL(≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were ≤ 5X the CRDL.	✓			
V. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓	✓	
Were the performance evaluation (PE) samples within the acceptance limits?				

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

LDC# 32172A6

VALIDATION FINDINGS WORKSHEET

Field Duplicates

Reviewer: A
2nd Reviewer: SM

Inorganics: Method: See Cover

Analyte	Concentration (ng/m3)		RPD (≤20)	
	3	4		
Hexavalent Chromium	0.0676	0.0682	1	

\\LDCFILESERVER\Validation\FIELD DUPLICATES\FD_inorganic\32172A6.wpd

LDC #: 32172A6

Validation Findings Worksheet
Initial and Continuing Calibration Calculation Verification

Page: 1 of 1
Reviewer: CL
2nd Reviewer: SM

Method: Inorganics, Method See Cover

The correlation coefficient (r) for the calibration of CC6+ was recalculated. Calibration date: 7/14/14

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

%R = Found X 100 / 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 r or r^2	Reported r or r^2	Acceptable (Y/N)
Initial calibration	CC6+	s1	0.1	0.0000194	*0.99993*	0.99993	Y
		s2	0.1	0.0000413			
		s3	0.2	0.0000829			
		s4	0.5	0.0002111			
		s5	1	0.0004206			
		s6	2	0.0008628			
Calibration verification	CC6+	ICV (12:44)	True 0.5 ng/mL	Found 0.5087 ng/mL	102%	—	
Calibration verification	↓	CCV (15:48)	↓	0.5290 ng/mL	106%	—	↓
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 #: 32172A6

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Reviewer: QR
2nd Reviewer: SM

METHOD: Inorganics, Method Srecover

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

%R = Found / True x 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 = |S-D| / (S+D)/2 x 100 Where, S = Original sample concentration
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated %R / RPD	Reported %R / RPD	Acceptable (Y/N)
LCS	Laboratory control sample	Cr6+	1.07ng/mL	1.00ng/mL	107	107	Y
N	Matrix spike sample		(SSR-SR)				
10	Duplicate sample	Cr6+	00707ng/m3	00676ng/m3	4.48	4.31	Y

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

LDC #: SC41040

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

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

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 C_6^{0+} reported with a positive detect were recalculated and verified using the following equation:

Concentration =

$y = 0.0004316 - 0.0000393$

Recalculation:

#3: $\frac{0.0000606 + 0.0000393}{0.0004316} \times \frac{10\,mL}{22.13\,m^3} =$

$0.06756\,ng/m^3$

#	Sample ID	Analyte	Reported Concentration (ng/m^3)	Calculated Concentration (ng/m^3)	Acceptable (Y/N)
	1	C_6^{0+}	0.0413	0.0414	Y
	2		0.0543	0.0543	
	3		0.0676	0.0676	
	4 ~~4rsa~~		0.0682	0.0682	
	5 ~~5~~ a		0.0585	0.0585	
	7 ~~8~~ ~~Cargo~~ a		0.346	0.346	

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: 07/15/14 15:23
SUBMITTED: 07/10/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: OAM 1 **Lab ID:** 4071006-01 **Sampled:** 07/09/14 16:01
Matrix: Air **Sample Volume:** 21.7 m^3 **Received:** 07/10/14 11:29
Comments: Start Time 7/8/14 15:54 **Analysis Date:** 07/14/14 14:49

Hexavalent Chromium

Analyte	CAS Number	Results ng/m^3 Air	Flag	MDL ng/m^3 Air
Hexavalent Chromium	1854-02-99	0.0413		0.0036

7/16/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/15/14 15:23
SUBMITTED: 07/10/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: OAM 2 **Lab ID:** 4071006-02 **Sampled:** 07/09/14 16:32
Matrix: Air **Sample Volume:** 21.86 m^3 **Received:** 07/10/14 11:29
Comments: Start Time 7/8/14 16:15 **Analysis Date:** 07/14/14 14:59

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0543		0.0036

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: 07/15/14 15:23
SUBMITTED: 07/10/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1 **Lab ID:** 4071006-03 **Sampled:** 07/09/14 18:00
Matrix: Air **Sample Volume:** 22.13 m^3 **Received:** 07/10/14 11:29
Comments: Col 1 Start Time 7/8/14 17:25 **Analysis Date:** 07/14/14 14:07

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0676		0.0036

07/16/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/15/14 15:23
SUBMITTED: 07/10/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1D **Lab ID:** 4071006-04 **Sampled:** 07/09/14 18:03
Matrix: Air **Sample Volume:** 22.08 m^3 **Received:** 07/10/14 11:29
Comments: Col 2 Start Time 7/8/14 17:31 **Analysis Date:** 07/14/14 14:27

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0682		0.0036

02/16/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/15/14 15:23
SUBMITTED: 07/10/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-3 **Lab ID:** 4071006-06 **Sampled:** 07/09/14 17:23
Matrix: Air **Sample Volume:** 22.03 m^3 **Received:** 07/10/14 11:29
Comments: Start Time 7/8/14 16:54 **Analysis Date:** 07/14/14 15:09

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0585		0.0036

07/16/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/15/14 15:23
SUBMITTED: 07/10/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-4 **Lab ID:** 4071006-07 **Sampled:** 07/09/14 16:52
Matrix: Air **Sample Volume:** 21.85 m^3 **Received:** 07/10/14 11:29
Comments: Start Time 7/8/14 16:36 **Analysis Date:** 07/14/14 15:19

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.346		0.0036

02 7/16/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/15/14 15:23
SUBMITTED: 07/10/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-21 **Lab ID:** 4071006-08 **Sampled:** 07/09/14 00:00
Matrix: Air **Sample Volume:** 22.03 m^3 **Received:** 07/10/14 11:29
Comments: **Analysis Date:** 07/14/14 15:28

Hexavalent Chromium

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

07/16/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/15/14 15:23
SUBMITTED: 07/10/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-31 **Lab ID:** 4071006-09 **Sampled:** 07/09/14 00:00
Matrix: Air **Sample Volume:** 22.03 m^3 **Received:** 07/10/14 11:29
Comments: **Analysis Date:** 07/14/14 15:38

Hexavalent Chromium

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

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

July 17, 2014

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 July 16, 2014. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #32176:

SDG	Fraction
4071105	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

79 pages-SF 3 DAY TAT Attachment 1

Level IV

LDC #32176 (ERM - Morrisville, NC / Harbor Point, MD, Hexavalent Chromium Monitoring)

LDC	SDG#	DATE REC'D	(3) DATE DUE	Cr(VI) (D7614)																																	
Matrix:	Air/Water/Soil			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	W	S
A	4071105	07/16/14	07/21/14	8	0																																
Total	A/CR			8	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	0	0	8

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

LDC Report# 32176A6

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Harbor Point, MD, Hexavalent Chromium Monitoring

Collection Date: July 10, 2014

LDC Report Date: July 17, 2014

Matrix: Air

Parameters: Hexavalent Chromium

Validation Level: EPA Level IV

Laboratory: Eastern Research Group

Sample Delivery Group (SDG): 4071105

Sample Identification

OAM 1
PAM-1
PAM-1D
PAM-2
PAM-3
PAM-4
PAM-21
PAM-31
PAM-1DUP
PAM-1DDUP

Introduction

This data review covers 10 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 was identified as a trip blank. No hexavalent chromium was found.

Sample PAM-21 was identified as a field blank. 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 and PAM-1D 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	PAM-1D			
Hexavalent chromium	0.0558	0.0516	8 (≤20)	-	-

Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Data Qualification Summary - SDG 4071105

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

Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG 4071105

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 4071105

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

LDC #: 32176A6
SDG #: 4071105
Laboratory: Eastern Research Group

VALIDATION COMPLETENESS WORKSHEET
Level IV

Date: 7/17/14
Page: 1 of 1
Reviewer: SV
2nd Reviewer: SM

METHOD: Hexavalent Chromium (ASTM D7614)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 7/10/14
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Blanks	A	
V	Matrix Spike/Matrix Spike Duplicates	N	Not required
VI.	Duplicates	A	
VII.	Laboratory control samples	A	LCS/D
VIII.	Sample result verification	A	
IX.	Overall assessment of data	A	
X.	Field duplicates	SW	(2,3)
XI	Field blanks	ND	TB=8 FB=7

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

Validated Samples: all

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

Notes: _____

LDC #: 35176A6

VALIDATION FINDINGS CHECKLIST

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

Method: Inorganics (EPA Method Recover)

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

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

LDC# 32176A6

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: CL
2nd Reviewer: SM

Inorganics: Method See Cover

Analyte	Concentration (ng/m3)		RPD (≤20)	
	2	3		
Hexavalent Chromium	0.0558	0.0516	8	

\\LDCFILESERVER\Validation\FIELD DUPLICATES\FD_inorganic\32176A6.wpd

LDC #: 32176A6

Validation Findings Worksheet
Initial and Continuing Calibration Calculation Verification

Page: 1 of 1
Reviewer:
2nd Reviewer:

Method: Inorganics, Method See Cover

The correlation coefficient (r) for the calibration of CoT was recalculated. Calibration date: 7/15/14

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

%R = Found X 100 / 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 r or r^2	Reported r or r^2	Acceptable (Y/N)
Initial calibration	CoT	s1	0.1	0.000018	*0.99998*	0.99998	Y
		s2	0.1	0.0000394			
		s3	0.2	0.0000795			
		s4	0.5	0.0002084			
		s5	1	0.0004124			
		s6	2	0.0008368			
Calibration verification		ICV (09:58)	True 0.5 ng/mL	Found 0.5082 ng/mL	102	-	
Calibration verification		CCV (13:09)		0.5232 ng/mL	105	-	
Calibration verification							

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

LDC #: 38176A6

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Reviewer: QR
2nd Reviewer: SM

METHOD: Inorganics, Method Seecover

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

%R = Found / True x 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 = |S-D| / (S+D)/2 x 100 Where, S = Original sample concentration
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated %R / RPD	Reported %R / RPD	Acceptable (Y/N)
LCS	Laboratory control sample	Cr^{6+}	1.06 ng/mL	1.00 ng/mL	106	106	Y
N	Matrix spike sample		(SSR-SR)				
9	Duplicate sample	Cr^{6+}	0.0578 ng/m3	0.0558 ng/m3	3.52	3.45	Y

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

LDC #: 35176A6

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

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

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 Al : Cr6+ reported with a positive detect were recalculated and verified using the following equation:

Concentration =

$y = 0.0004194x - 0.0000337$

Recalculation:

$$\frac{0.0000407 + 0.0000337}{0.0004194} \times \frac{10\,mL}{21.0\,m^3} = 0.04982\ ng/m^3$$

#	Sample ID	Analyte	Reported Concentration (ng/m3)	Calculated Concentration (ng/m3)	Acceptable (Y/N)
	1	Cr6+	0.0499	0.0498	Y
	2	↓	0.0558	0.0558	↓
	3		0.0516	0.0516	
	4		0.0695	0.0695	
	5		0.0453	0.0453	
	6	↓	0.0565	0.0565	↓

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: 07/16/14 14:38
SUBMITTED: 07/11/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: OAM 1 **Lab ID:** 4071105-01 **Sampled:** 07/10/14 15:38
Matrix: Air **Sample Volume:** 21.09 m^3 **Received:** 07/11/14 10:46
Comments: Start Time 7/9/14 16:12 **Analysis Date:** 07/15/14 12:09

Hexavalent Chromium

Analyte	CAS Number	Results ng/m^3 Air	Flag	MDL ng/m^3 Air
Hexavalent Chromium	1854-02-99	0.0499		0.0036

07/17/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/16/14 14:38
SUBMITTED: 07/11/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1 **Lab ID:** 4071105-02 **Sampled:** 07/10/14 17:56
Matrix: Air **Sample Volume:** 21.47 m^3 **Received:** 07/11/14 10:46
Comments: Col 1 Start Time 7/9/14 18:04 **Analysis Date:** 07/15/14 11:23

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0558		0.0036

07/17/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/16/14 14:38
SUBMITTED: 07/11/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1D
Matrix: Air
Comments: Col 2 Start Time 7/9/14 18:07

Lab ID: 4071105-03
Sample Volume: 21.58 m^3

Sampled: 07/10/14 18:06
Received: 07/11/14 10:46
Analysis Date: 07/15/14 11:42

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0516		0.0036

07/17/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/16/14 14:38
SUBMITTED: 07/11/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-2 **Lab ID:** 4071105-04 **Sampled:** 07/10/14 17:29
Matrix: Air **Sample Volume:** 21.85 m^3 **Received:** 07/11/14 10:46
Comments: Start Time 7/9/14 17:39 **Analysis Date:** 07/15/14 12:19

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0695		0.0036

07/17/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/16/14 14:38
SUBMITTED: 07/11/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-3 **Lab ID:** 4071105-05 **Sampled:** 07/10/14 17:19
Matrix: Air **Sample Volume:** 21.5 m^3 **Received:** 07/11/14 10:46
Comments: Start Time 7/9/14 17:26 **Analysis Date:** 07/15/14 12:29

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0453		0.0036

07/17/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/16/14 14:38
SUBMITTED: 07/11/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-4 **Lab ID:** 4071105-06 **Sampled:** 07/10/14 16:53
Matrix: Air **Sample Volume:** 21.37 m^3 **Received:** 07/11/14 10:46
Comments: Start Time 7/9/14 17:09 **Analysis Date:** 07/15/14 12:39

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0565		0.0036

07/17/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/16/14 14:38
SUBMITTED: 07/11/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-21 **Lab ID:** 4071105-07 **Sampled:** 07/10/14 00:00
Matrix: Air **Sample Volume:** 21.85 m^3 **Received:** 07/11/14 10:46
Comments: **Analysis Date:** 07/15/14 12:49

Hexavalent Chromium

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

07/17/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/16/14 14:38
SUBMITTED: 07/11/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-31 **Lab ID:** 4071105-08 **Sampled:** 07/10/14 00:00
Matrix: Air **Sample Volume:** 21.5 m^3 **Received:** 07/11/14 10:46
Comments: **Analysis Date:** 07/15/14 12:59

Hexavalent Chromium

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

07/17/14

LABORATORY DATA CONSULTANTS, INC.

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

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

July 22, 2014

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 July 18, 2014. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #32201:

SDG	Fraction
4071506/4071617	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

106 pages-SF 3 DAY TAT

Attachment 1

Level IV LDC #32201 (ERM - Morrisville, NC / Harbor Point, MD, Hexavalent Chromium Monitoring)

LDC	SDG#	DATE REC'D	(3) DATE DUE	Cr(VI) (D7614)																																			
Matrix: Air/Water/Soil				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	W	S	W	S
A	4071506/4071617	07/18/14	07/23/14	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	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

32201ST.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Harbor Point, MD, Hexavalent Chromium Monitoring

Collection Date: July 11 through July 15, 2014

LDC Report Date: July 22, 2014

Matrix: Air

Parameters: Hexavalent Chromium

Validation Level: EPA Level IV

Laboratory: Eastern Research Group

Sample Delivery Group (SDG): 4071506/4071617

Sample Identification

OAM 1 (071414)
OAM 2 (071414)
PAM-1 (071414)
PAM-1D (071414)
PAM-2 (071414)
PAM-3 (071414)
PAM-4 (071414)
PAM-21 (071414)
PAM-31 (071414)
OAM 1 (071114)
OAM 2 (071114)
PAM-1 (071114)
PAM-1D (071114)
PAM-2 (071114)
PAM-3 (071114)
PAM-4 (071114)
PAM-21 (071114)
PAM-31 (071114)
PAM-1 (071414)DUP
PAM-1D (071414)DUP
PAM-1 (071114)DUP
PAM-1D (071114)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 (071414) and PAM-31 (071114) were identified as trip blanks. No hexavalent chromium was found.

Samples PAM-21 (071414) and PAM-21 (071114) 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 (071414) and PAM-1D (071414) and samples PAM-1 (071114) and PAM-1D (071114) 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 (071414)	PAM-1D (071414)			
Hexavalent chromium	0.0873	0.0922	5 (≤20)	-	-

Analyte	Concentration (ng/m^3)		RPD (Limits)	Flags	A or P
	PAM-1 (071114)	PAM-1D (071114)			
Hexavalent chromium	0.0198	0.0144	32 (≤20)	NQ	-

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

Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Data Qualification Summary - SDG 4071506/4071617

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

Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG 4071506/4071617

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 4071506/4071617

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

LDC #: 32201A6 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/21/14

SDG #: 4071506/4071617 Level IV Page: 1 of 1

Laboratory: Eastern Research Group Reviewer: CL

2nd Reviewer: W

METHOD: Hexavalent Chromium (ASTM D7614)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 7/11-14/14
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Blanks	A	
V	Matrix Spike/Matrix Spike Duplicates	N	Not required
VI.	Duplicates	A	DUP
VII.	Laboratory control samples	A	LCS/P
VIII.	Sample result verification	A	
IX.	Overall assessment of data	A	
X.	Field duplicates	SW	(3,4) (12,13)
XI	Field blanks	ND	TB=9,18 FB=8,17

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

Validated Samples: all

1	OAM 1 (071414)	11	OAM 2 (071114)	21	PAM-1 (071114)DUP	31	
2	OAM 2 (071414)	12	PAM-1 (071114)	22	PAM-1D (071114)DUP	32	
3	PAM-1 (071414)	13	PAM-1D (071114)	23		33	
4	PAM-1D (071414)	14	PAM-2 (071114)	24		34	
5	PAM-2 (071414)	15	PAM-3 (071114)	25		35	
6	PAM-3 (071414)	16	PAM-4 (071114)	26		36	
7	PAM-4 (071414)	17	PAM-21 (071114)	27		37	
8	PAM-21 (071414)	18	PAM-31 (071114)	28		38	
9	PAM-31 (071414)	19	PAM-1 (071414)DUP	29		39	
10	OAM 1 (071114)	20	PAM-1D (071414)DUP	30		40	

Notes: Dates appended to differentiate between samples

SDC #: 30004A6

VALIDATION FINDINGS CHECKLIST

Reviewer: CR
2nd Reviewer: ✓

Method: Inorganics (EPA Method Seecolor)

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

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

LDC# 32201A6

VALIDATION FINDINGS WORKSHEET

Field Duplicates

Reviewer: GK

2nd Reviewer: W

Inorganics: Method See Cover

Analyte	Concentration (ng/m3)		RPD (≤20)	
	3	4		
Hexavalent Chromium	0.0873	0.0922	5	

Analyte	Concentration (ng/m3)		RPD (≤20)	
	12	13		
Hexavalent Chromium	0.0198	0.0144	32	NQ

NQ = not qualified (one or both results are <5x the RL)

\\LDCFILESERVER\Validation\FIELD DUPLICATES\FD_inorganic\32201A6.wpd

LDC #: 32201A6

Validation Findings Worksheet
Initial and Continuing Calibration Calculation Verification

Page: 1 of 1
Reviewer: AL
2nd Reviewer: LW

Method: Inorganics, Method See Cover

The correlation coefficient (r) for the calibration of _____ was recalculated. Calibration date: 7/16/14

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

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

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

Type of analysis	Analyte	Standard	Conc. (ng/mL)	Area	Recalculated r or r^2	Reported r or r^2	Acceptable (Y/N)
Initial calibration	Cr6+	s1	0.1	0.0000183	*0.99983*	0.99983	Y
		s2	0.1	0.0000382			
		s3	0.2	0.0000794			
		s4	0.5	0.0002079			
		s5	1	0.0003885			
		s6	2	0.0007871			
Calibration verification		ICV	True 0.5	Found (ng/mL) 0.5033	101	-	
Calibration verification		CCV(1-11)	0.5	0.5360	107	-	
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 #: 39001A6

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Reviewer: QR
2nd Reviewer: [illegible]

METHOD: Inorganics, Method Secover

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

%R = Found / True x 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 = |S-D| / (S+D)/2 x 100 Where, S = Original sample concentration
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated %R / RPD	Reported %R / RPD	Acceptable (Y/N)
LCS	Laboratory control sample	Cr^{6+}	1.06 ng/mL	1.00 ng/mL	106	106	Y
N	Matrix spike sample		(SSR-SR)				
19	Duplicate sample	Cr^{6+}	0.090219/m3	0.0873 ng/m3	3.34	3.23	Y

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

LDC #: 32200A6

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: CR
2nd reviewer: [signature]

METHOD: Inorganics, Method see cover

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

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

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

Concentration = $y = 0.00035128x + 0.00000119$

Recalculation: $\frac{0.0000233 - 0.00000119}{0.0003928} \times \frac{10mL}{21.22m^3} = 0.0265 ng/m^3$

#	Sample ID	Analyte	Reported Concentration (ng/m3)	Calculated Concentration (ng/m3)	Acceptable (Y/N)
	1	Cd	0.0265	0.0265	Y
	2		0.0228	0.0228	
	3		0.0873	0.0874	
	4		0.0922	0.0922	
	5		0.0597	0.0596	
	6		0.0667	0.0668	
	10		0.0305	0.0304	
	11		0.0166	0.0166	
	12		0.0198	0.0198	
	13		0.0144	0.0144	
	14		0.0349	0.0350	
	15		0.0354	0.0354	
	16		0.0403	0.0403	

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: 07/18/14 16:32
SUBMITTED: 07/15/14 to 07/16/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: OAM 1 **Lab ID:** 4071506-01 **Sampled:** 07/14/14 16:01
Matrix: Air **Sample Volume:** 21.22 m^3 **Received:** 07/15/14 10:51
Comments: Start Time 7/13/14 16:26 **Analysis Date:** 07/16/14 13:51

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0265		0.0036

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: 07/18/14 16:32
SUBMITTED: 07/15/14 to 07/16/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: OAM 2 **Lab ID:** 4071506-02 **Sampled:** 07/14/14 16:28
Matrix: Air **Sample Volume:** 21.24 m^3 **Received:** 07/15/14 10:51
Comments: Start Time 7/13/14 16:52 **Analysis Date:** 07/16/14 14:01

Hexavalent Chromium

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

08/12/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/18/14 16:32
SUBMITTED: 07/15/14 to 07/16/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1 **Lab ID:** 4071506-03 **Sampled:** 07/14/14 18:37
Matrix: Air **Sample Volume:** 21.94 m^3 **Received:** 07/15/14 10:51
Comments: Col 1 Start Time 7/13/14 18:15 **Analysis Date:** 07/16/14 12:30

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0873		0.0036

07/22/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/18/14 16:32
SUBMITTED: 07/15/14 to 07/16/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1D **Lab ID:** 4071506-04 **Sampled:** 07/14/14 18:44
Matrix: Air **Sample Volume:** 21.97 m^3 **Received:** 07/15/14 10:51
Comments: Col 2 Start Time 7/13/14 18:19 **Analysis Date:** 07/16/14 12:50

Hexavalent Chromium

Analyte	CAS Number	Results ng/m^3 Air	Flag	MDL ng/m^3 Air
Hexavalent Chromium	1854-02-99	0.0922		0.0036

07/22/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/18/14 16:32
SUBMITTED: 07/15/14 to 07/16/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-2 **Lab ID:** 4071506-05 **Sampled:** 07/14/14 17:38
Matrix: Air **Sample Volume:** 21.39 m^3 **Received:** 07/15/14 10:51
Comments: Start Time 7/13/14 17:52 **Analysis Date:** 07/16/14 14:30

Hexavalent Chromium

Analyte	CAS Number	Results ng/m^3 Air	Flag	MDL ng/m^3 Air
Hexavalent Chromium	1854-02-99	0.0597		0.0036

02/22/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/18/14 16:32
SUBMITTED: 07/15/14 to 07/16/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-3 **Lab ID:** 4071506-06 **Sampled:** 07/14/14 17:25
Matrix: Air **Sample Volume:** 21.47 m^3 **Received:** 07/15/14 10:51
Comments: Start Time 7/13/14 17:38 **Analysis Date:** 07/16/14 14:40

Hexavalent Chromium

Analyte	CAS Number	Results ng/m^3 Air	Flag	MDL ng/m^3 Air
Hexavalent Chromium	1854-02-99	0.0667		0.0036

07/22/14

CERTIFICATE OF ANALYSIS

ERG

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: 07/18/14 16:32
SUBMITTED: 07/15/14 to 07/16/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-4 **Lab ID:** 4071506-07 **Sampled:** 07/14/14 17:06
Matrix: Air **Sample Volume:** 21.37 m^3 **Received:** 07/15/14 10:51
Comments: Start Time 7/13/14 17:21 **Analysis Date:** 07/16/14 14:50

Hexavalent Chromium

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

07/22/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/18/14 16:32
SUBMITTED: 07/15/14 to 07/16/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-21 **Lab ID:** 4071506-08 **Sampled:** 07/14/14 00:00
Matrix: Air **Sample Volume:** 21.39 m^3 **Received:** 07/15/14 10:51
Comments: **Analysis Date:** 07/16/14 15:00

Hexavalent Chromium

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

07/22/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/18/14 16:32
SUBMITTED: 07/15/14 to 07/16/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-31 **Lab ID:** 4071506-09 **Sampled:** 07/14/14 00:00
Matrix: Air **Sample Volume:** 21.47 m^3 **Received:** 07/15/14 10:51
Comments: **Analysis Date:** 07/16/14 15:10

Hexavalent Chromium

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

07/22/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/18/14 16:32
SUBMITTED: 07/15/14 to 07/16/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: OAM 1 **Lab ID:** 4071617-01 **Sampled:** 07/11/14 15:59
Matrix: Air **Sample Volume:** 21.75 m^3 **Received:** 07/16/14 11:54
Comments: Start Time 7/10/14 15:49 **Analysis Date:** 07/16/14 15:20

Hexavalent Chromium

Analyte	CAS Number	Results ng/m^3 Air	Flag	MDL ng/m^3 Air
Hexavalent Chromium	1854-02-99	0.0305		0.0036

02/22/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/18/14 16:32
SUBMITTED: 07/15/14 to 07/16/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: OAM 2 **Lab ID:** 4071617-02 **Sampled:** 07/11/14 16:29
Matrix: Air **Sample Volume:** 21.79 m^3 **Received:** 07/16/14 11:54
Comments: Start Time 7/10/14 16:17 **Analysis Date:** 07/16/14 15:30

Hexavalent Chromium

Analyte	CAS Number	Results ng/m^3 Air	Flag	MDL ng/m^3 Air
Hexavalent Chromium	1854-02-99	0.0166		0.0036

07/22/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/18/14 16:32
SUBMITTED: 07/15/14 to 07/16/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1 **Lab ID:** 4071617-03 **Sampled:** 07/11/14 18:30
Matrix: Air **Sample Volume:** 21.83 m^3 **Received:** 07/16/14 11:54
Comments: Col 1 Start Time 7/10/14 18:03 **Analysis Date:** 07/16/14 13:10

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0198		0.0036

07/22/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/18/14 16:32
SUBMITTED: 07/15/14 to 07/16/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1D **Lab ID:** 4071617-04 **Sampled:** 07/11/14 18:38
Matrix: Air **Sample Volume:** 21.99 m^3 **Received:** 07/16/14 11:54
Comments: Col 2 Start Time 7/10/14 18:10 **Analysis Date:** 07/16/14 13:29

Hexavalent Chromium

Analyte	CAS Number	Results ng/m^3 Air	Flag	MDL ng/m^3 Air
Hexavalent Chromium	1854-02-99	0.0144		0.0036

7/24/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/18/14 16:32
SUBMITTED: 07/15/14 to 07/16/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-2 **Lab ID:** 4071617-05 **Sampled:** 07/11/14 18:01
Matrix: Air **Sample Volume:** 21.98 m^3 **Received:** 07/16/14 11:54
Comments: Start Time 7/10/14 17:35 **Analysis Date:** 07/16/14 15:40

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0349		0.0036

07/12/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/18/14 16:32
SUBMITTED: 07/15/14 to 07/16/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-3 **Lab ID:** 4071617-06 **Sampled:** 07/11/14 17:45
Matrix: Air **Sample Volume:** 21.93 m^3 **Received:** 07/16/14 11:54
Comments: Start Time 7/10/14 17:23 **Analysis Date:** 07/16/14 15:50

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0354		0.0036

07/22/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/18/14 16:32
SUBMITTED: 07/15/14 to 07/16/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-4 **Lab ID:** 4071617-07 **Sampled:** 07/11/14 17:18
Matrix: Air **Sample Volume:** 21.85 m^3 **Received:** 07/16/14 11:54
Comments: Start Time 7/10/14 17:06 **Analysis Date:** 07/16/14 15:59

Hexavalent Chromium

Analyte	CAS Number	Results ng/m^3 Air	Flag	MDL ng/m^3 Air
Hexavalent Chromium	1854-02-99	0.0403		0.0036

08/1/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/18/14 16:32
SUBMITTED: 07/15/14 to 07/16/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-21 **Lab ID:** 4071617-08 **Sampled:** 07/11/14 00:00
Matrix: Air **Sample Volume:** 21.98 m^3 **Received:** 07/16/14 11:54
Comments: **Analysis Date:** 07/16/14 16:29

Hexavalent Chromium

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

CL 7/22/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/18/14 16:32
SUBMITTED: 07/15/14 to 07/16/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-31 **Lab ID:** 4071617-09 **Sampled:** 07/11/14 00:00
Matrix: Air **Sample Volume:** 21.93 m^3 **Received:** 07/16/14 11:54
Comments: **Analysis Date:** 07/16/14 16:39

Hexavalent Chromium

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

07/22/14

LABORATORY DATA CONSULTANTS, INC.

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

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

July 22, 2014

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 July 21, 2014. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #32210:

SDG	Fraction
4071617	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

102 pages-SF 3 DAY TAT Attachment 1

Level IV

LDC #32210 (ERM - Morrisville, NC / Harbor Point, MD, Hexavalent Chromium Monitoring)

LDC	SDG#	DATE REC'D	(3) DATE DUE	Cr(VI) (D7614)																																	
Matrix:	Air/Water/Soil			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	W	S
A	4071617	07/21/14	07/24/14	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	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

LDC Report# 32210A6

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Harbor Point, MD, Hexavalent Chromium Monitoring

Collection Date: July 12 through July 15, 2014

LDC Report Date: July 22, 2014

Matrix: Air

Parameters: Hexavalent Chromium

Validation Level: EPA Level IV

Laboratory: Eastern Research Group

Sample Delivery Group (SDG): 4071617

Sample Identification

OAM 1 (07/12/14)
OAM 2 (07/12/14)
PAM-1 (07/12/14)
PAM-1D (07/12/14)
PAM-2 (07/12/14)
PAM-3 (07/12/14)
PAM-4 (07/12/14)
PAM-21 (07/12/14)
PAM-31 (07/12/14)
OAM 1 (07/15/14)
OAM 2 (07/15/14)
PAM-1 (07/15/14)
PAM-1D (07/15/14)
PAM-2 (07/15/14)
PAM-3 (07/15/14)
PAM-4 (07/15/14)
PAM-21 (07/15/14)
PAM-31 (07/15/14)
PAM-1 (07/12/14)DUP
PAM-1D (07/12/14)DUP
PAM-1 (07/15/14)DUP
PAM-1D (07/15/14)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 (07/12/14) and PAM-31 (07/15/14) were identified as trip blanks. No hexavalent chromium was found.

Samples PAM-21 (07/12/14) and PAM-21 (07/15/14) 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 (07/12/14) and PAM-1D (07/12/14) and samples PAM-1 (07/15/14) and PAM-1D (07/15/14) were identified as field duplicates. No hexavalent chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (ng/m^3)		RPD (Limits)	Flags	A or P
	PAM-1 (07/12/14)	PAM-1D (07/12/14)			
Hexavalent chromium	0.0848	0.0791	7 (≤20)	-	-

Analyte	Concentration (ng/m^3)		RPD (Limits)	Flags	A or P
	PAM-1 (07/15/14)	PAM-1D (07/15/14)			
Hexavalent chromium	0.111	0.0947	16 (≤20)	-	-

Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Data Qualification Summary - SDG 4071617

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

Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG 4071617

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 4071617

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

LDC #: 32210A6
SDG #: 4071617
Laboratory: Eastern Research Group

VALIDATION COMPLETENESS WORKSHEET
Level IV

Date: 7/21/14
Page: 1 of 1
Reviewer: CL
2nd Reviewer:

METHOD: Hexavalent Chromium (ASTM D7614)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 7/12-15/14
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Blanks	A	
V	Matrix Spike/Matrix Spike Duplicates	N	Not required
VI.	Duplicates	A	DUP
VII.	Laboratory control samples	A	LCS/D
VIII.	Sample result verification	A	
IX.	Overall assessment of data	A	
X.	Field duplicates	SW	(3,4) (12,13)
XI	Field blanks	ND	FB=8,17 TB=9,18

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

Validated Samples: air

1	OAM 1 (07/12/14)	11	OAM 2 (07/15/14)	21	PAM-1 (07/15/14)DUP	31	
2	OAM 2 (07/12/14)	12	PAM-1 (07/15/14)	22	PAM-1D (07/15/14)DUP	32	
3	PAM-1 (07/12/14)	13	PAM-1D (07/15/14)	23		33	
4	PAM-1D (07/12/14)	14	PAM-2 (07/15/14)	24		34	
5	PAM-2 (07/12/14)	15	PAM-3 (07/15/14)	25		35	
6	PAM-3 (07/12/14)	16	PAM-4 (07/15/14)	26		36	
7	PAM-4 (07/12/14)	17	PAM-21 (07/15/14)	27		37	
8	PAM-21 (07/12/14)	18	PAM-31 (07/15/14)	28		38	
9	PAM-31 (07/12/14)	19	PAM-1 (07/12/14)DUP	29		39	
10	OAM 1 (07/15/14)	20	PAM-1D (07/12/14)DUP	30		40	

Notes: Dates appended to differentiate between samples

DC #: 32240A6

VALIDATION FINDINGS CHECKLIST

Reviewer: CR
2nd Reviewer: [illegible]

Method: Inorganics (EPA Method Seecover)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients ≥ 0.995?	✓			
Were all initial and continuing calibration verification %Rs within the ~~90-110~~ 85-115 % QC limits?				
Were titrant checks performed as required? (Level IV only)			✓	
Were balance checks performed as required? (Level IV only)			✓	
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. Matrix spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			Rpan6
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.			✓	
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL(≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were ≤ 5X the CRDL.	✓			
V. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

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

LDC# 32210A6

VALIDATION FINDINGS WORKSHEET

Field Duplicates

Reviewer: CV

2nd Reviewer: V

Inorganics: Method See Cover

Analyte	Concentration (ng/m3)		RPD (≤20)	
	3	4		
Hexavalent Chromium	0.0848	0.0791	7	

Analyte	Concentration (ng/m3)		RPD (≤20)	
	12	13		
Hexavalent Chromium	0.111	0.0947	16	

\\LDCFILESERVER\Validation\FIELD DUPLICATES\FD_inorganic\32210A6.wpd

LDC #: 32260A6

Validation Findings Worksheet
Initial and Continuing Calibration Calculation Verification

Page: 1 of 1
Reviewer: CL
2nd Reviewer: V

Method: Inorganics, Method See Cover

The correlation coefficient (r) for the calibration of CGT was recalculated. Calibration date: 7/17/14

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

%R = Found X 100 / 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 r or r^2	Reported r or r^2	Acceptable (Y/N)
Initial calibration	CGT	s1	0.1	0.0000141	*0.99991*	0.99990	Y
		s2	0.1	0.0000351			
		s3	0.2	0.0000743			
		s4	0.5	0.000196			
		s5	1	0.0004122			
		s6	2	0.0008108			
Calibration verification		ICV	True 0.5	Found(ng/mL) 0.5029	101	-	
Calibration verification		CCV(13:14)		0.5271	105	-	
Calibration verification							

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

LDC #: 32210AC

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

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

METHOD: Inorganics, Method Seecover

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

$\%R = \frac{Found}{True} \times 100$ 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 %R / RPD	Reported %R / RPD	Acceptable (Y/N)
LCS	Laboratory control sample	Cr^{6+}	1.058g/mL	1.00 ng/mL	105	105	Y
N	Matrix spike sample		(SSR-SR)				
19	Duplicate sample	Cr^{6+}	0.0835ng/m3	0.0848ng/m3	1.54	1.55	Y

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

LDC #: 32210A6

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

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

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 XX3 reported with a positive detect were recalculated and verified using the following equation:

Concentration = $y = 0.0004x - 0.000006$

Recalculation:

$$\frac{0.000066 + 0.000006}{0.00041} \times \frac{10\ mL}{20.71\ m^3} = 0.0847\ ng/m^3$$

#	Sample ID	Analyte	Reported Concentration (ng/m³)	Calculated Concentration (ng/m³)	Acceptable (Y/N)
	1	Co	0.0831	0.0831	Y
	2		0.0231	0.0230	
	3		0.0848	0.0848	
	4		0.0791	0.0791	
	5		0.0921	0.0921	
	6		0.0993	0.0993	
	7		0.112	0.112	
	10		0.0655	0.0655	
	11		0.141	0.141	
	12		0.111	0.111	
	13		0.0947	0.0946	
	14		0.0880	0.0880	
	15		0.0911	0.0911	
	16		0.122	0.122	

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: 07/21/14 13:17
SUBMITTED: 07/16/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: OAM 1 **Lab ID:** 4071617-10 **Sampled:** 07/12/14 15:42
Matrix: Air **Sample Volume:** 21.22 m^3 **Received:** 07/16/14 11:54
Comments: Start Time 7/11/14 16:07 **Analysis Date:** 07/17/14 12:55

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0831		0.0036

S2 7/22/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/21/14 13:17
SUBMITTED: 07/16/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: OAM 2 **Lab ID:** 4071617-11 **Sampled:** 07/12/14 15:57
Matrix: Air **Sample Volume:** 20.87 m^3 **Received:** 07/16/14 11:54
Comments: Start Time 7/11/14 16:45 **Analysis Date:** 07/17/14 13:05

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0231		0.0036

07/22/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/21/14 13:17
SUBMITTED: 07/16/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1 **Lab ID:** 4071617-12 **Sampled:** 07/12/14 17:38
Matrix: Air **Sample Volume:** 20.71 m^3 **Received:** 07/16/14 11:54
Comments: Col 1 Start Time 7/11/14 18:37 **Analysis Date:** 07/17/14 11:35

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0848		0.0036

07/22/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/21/14 13:17
SUBMITTED: 07/16/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1D **Lab ID:** 4071617-13 **Sampled:** 07/12/14 17:45
Matrix: Air **Sample Volume:** 20.71 m^3 **Received:** 07/16/14 11:54
Comments: Col 2 Start Time 7/11/14 18:44 **Analysis Date:** 07/17/14 11:54

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0791		0.0036

07/22/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/21/14 13:17
SUBMITTED: 07/16/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-2 **Lab ID:** 4071617-14 **Sampled:** 07/12/14 17:08
Matrix: Air **Sample Volume:** 20.71 m^3 **Received:** 07/16/14 11:54
Comments: Start Time 7/11/14 18:07 **Analysis Date:** 07/17/14 13:34

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0921		0.0036

07/22/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/21/14 13:17
SUBMITTED: 07/16/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-3 **Lab ID:** 4071617-15 **Sampled:** 07/12/14 16:54
Matrix: Air **Sample Volume:** 20.71 m^3 **Received:** 07/16/14 11:54
Comments: Start Time 7/11/14 17:53 **Analysis Date:** 07/17/14 13:44

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0993		0.0036

07/22/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/21/14 13:17
SUBMITTED: 07/16/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-4 **Lab ID:** 4071617-16 **Sampled:** 07/12/14 16:31
Matrix: Air **Sample Volume:** 20.71 m^3 **Received:** 07/16/14 11:54
Comments: Start Time 7/11/14 17:29 **Analysis Date:** 07/17/14 13:54

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.112		0.0036

07/12/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/21/14 13:17
SUBMITTED: 07/16/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-21 **Lab ID:** 4071617-17 **Sampled:** 07/12/14 00:00
Matrix: Air **Sample Volume:** 20.71 m^3 **Received:** 07/16/14 11:54
Comments: **Analysis Date:** 07/17/14 14:04

Hexavalent Chromium

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

07/21/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/21/14 13:17
SUBMITTED: 07/16/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-31 **Lab ID:** 4071617-18 **Sampled:** 07/12/14 00:00
Matrix: Air **Sample Volume:** 20.71 m^3 **Received:** 07/16/14 11:54
Comments: **Analysis Date:** 07/17/14 14:14

Hexavalent Chromium

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

07/12/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/21/14 13:17
SUBMITTED: 07/16/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: OAM 1 **Lab ID:** 4071617-19 **Sampled:** 07/15/14 16:37
Matrix: Air **Sample Volume:** 22 m^3 **Received:** 07/16/14 11:54
Comments: Start Time 7/14/14 16:11 **Analysis Date:** 07/17/14 14:24

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0655		0.0036

07/22/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/21/14 13:17
SUBMITTED: 07/16/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: OAM 2 **Lab ID:** 4071617-20 **Sampled:** 07/15/14 17:03
Matrix: Air **Sample Volume:** 22.05 m^3 **Received:** 07/16/14 11:54
Comments: Start Time 7/14/14 16:33 **Analysis Date:** 07/17/14 14:34

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.141		0.0036

07/21/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/21/14 13:17
SUBMITTED: 07/16/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1 **Lab ID:** 4071617-21 **Sampled:** 07/15/14 18:43
Matrix: Air **Sample Volume:** 21.26 m^3 **Received:** 07/16/14 11:54
Comments: Col 1 Start Time 7/14/14 18:42 **Analysis Date:** 07/17/14 12:14

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.111		0.0036

07/22/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/21/14 13:17
SUBMITTED: 07/16/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1D **Lab ID:** 4071617-22 **Sampled:** 07/15/14 18:47
Matrix: Air **Sample Volume:** 21.58 m^3 **Received:** 07/16/14 11:54
Comments: Col 2 Start Time 7/14/14 18:49 **Analysis Date:** 07/17/14 12:34

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0947		0.0036

07/21/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/21/14 13:17
SUBMITTED: 07/16/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-2 **Lab ID:** 4071617-23 **Sampled:** 07/15/14 18:09
Matrix: Air **Sample Volume:** 21.73 m^3 **Received:** 07/16/14 11:54
Comments: Start Time 7/14/14 17:41 **Analysis Date:** 07/17/14 14:44

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0880		0.0036

07/21/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/21/14 13:17
SUBMITTED: 07/16/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-3 **Lab ID:** 4071617-24 **Sampled:** 07/15/14 17:53
Matrix: Air **Sample Volume:** 21.97 m^3 **Received:** 07/16/14 11:54
Comments: Start Time 7/14/14 17:29 **Analysis Date:** 07/17/14 14:54

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0911		0.0036

07/22/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/21/14 13:17
SUBMITTED: 07/16/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-4 **Lab ID:** 4071617-25 **Sampled:** 07/15/14 17:37
Matrix: Air **Sample Volume:** 21.99 m^3 **Received:** 07/16/14 11:54
Comments: Start Time 7/14/14 17:11 **Analysis Date:** 07/17/14 15:03

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.122		0.0036

07/22/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/21/14 13:17
SUBMITTED: 07/16/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-21 **Lab ID:** 4071617-26 **Sampled:** 07/15/14 00:00
Matrix: Air **Sample Volume:** 21.73 m^3 **Received:** 07/16/14 11:54
Comments: **Analysis Date:** 07/17/14 15:33

Hexavalent Chromium

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

07/17/14

CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc
75 Valley Stream Parkway, Suite 400
Malvern, PA 19355
ATTN: Mr. Jeff Boggs
PHONE: (443) 803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00
REPORTED: 07/21/14 13:17
SUBMITTED: 07/16/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-31 **Lab ID:** 4071617-27 **Sampled:** 07/15/14 00:00
Matrix: Air **Sample Volume:** 21.97 m^3 **Received:** 07/16/14 11:54
Comments: **Analysis Date:** 07/17/14 15:43

Hexavalent Chromium

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

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

July 23, 2014

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 July 22, 2014. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #32225:

SDG	Fraction
4071701/4071830	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

106 pages-SF 3 DAY TAT

Attachment 1

Level IV **LDC #32225 (ERM - Morrisville, NC / Harbor Point, MD, Hexavalent Chromium Monitoring)**

LDC	SDG#	DATE REC'D	(3) DATE DUE	Cr(VI) (D7614)																																	
Matrix: Air/Water/Soil				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	W	S
A	4071701/4071830	07/22/14	07/25/14	18	0																																
Total	T/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	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: July 16 through July 17, 2014

LDC Report Date: July 22, 2014

Matrix: Air

Parameters: Hexavalent Chromium

Validation Level: EPA Level IV

Laboratory: Eastern Research Group

Sample Delivery Group (SDG): 4071701/4071830

Sample Identification

OAM 1 (07/16/14)
OAM 2 (07/16/14)
PAM-1 (07/16/14)
PAM-1D (07/16/14)
PAM-2 (07/16/14)
PAM-3 (07/16/14)
PAM-4 (07/16/14)
PAM-21 (07/16/14)
PAM-31 (07/16/14)
OAM 1 (07/17/14)
OAM 2 (07/17/14)
PAM-1 (07/17/14)
PAM-1D (07/17/14)
PAM-2 (07/17/14)
PAM-3 (07/17/14)
PAM-4 (07/17/14)
PAM-21 (07/17/14)
PAM-31 (07/17/14)
PAM-1 (07/16/14)DUP
PAM-1 (07/16/14)DDUP
PAM-1 (07/17/14)DUP
PAM-1D (07/17/14)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 (07/16/14) and PAM-31 (07/17/14) were identified as trip blanks. No hexavalent chromium was found.

Samples PAM-21 (07/16/14) and PAM-21 (07/17/14) 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 (07/16/14) and PAM-1D (07/16/14) and samples PAM-1 (07/17/14) and PAM-1D (07/17/14) were identified as field duplicates. No hexavalent chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (ng/m^3)		RPD (Limits)	Flags	A or P
	PAM-1 (07/16/14)	PAM-1D (07/16/14)			
Hexavalent chromium	0.0228	0.0194	16 (≤20)	-	-

Analyte	Concentration (ng/m^3)		RPD (Limits)	Flags	A or P
	PAM-1 (07/17/14)	PAM-1D (07/17/14)			
Hexavalent chromium	0.0540	0.0444	20 (≤20)	-	-

Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Data Qualification Summary - SDG 4071701/4071830

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

Harbor Point, MD, Hexavalent Chromium Monitoring
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG 4071701/4071830

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 4071701/4071830

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

LDC #: 32225A6
SDG #: 4071701/4071830
Laboratory: Eastern Research Group

VALIDATION COMPLETENESS WORKSHEET
Level IV

Date: 7/22/14
Page: 1 of 1
Reviewer: ar
2nd Reviewer: SM

METHOD: Hexavalent Chromium (ASTM D7614)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 7/16-17/14
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Blanks	A	
V	Matrix Spike/Matrix Spike Duplicates	N	Not required
VI.	Duplicates	A	DUP
VII.	Laboratory control samples	A	LCS/D
VIII.	Sample result verification	A	
IX.	Overall assessment of data	A	
X.	Field duplicates	SW	(3,4) (12,13)
XI	Field blanks	ND	FB=8,17 TB=9,18

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

Validated Samples: air

1	OAM 1 (07/16/14)	11	OAM 2 (07/17/14)	21	PAM-1 (07/17/14)DUP	31	
2	OAM 2 (07/16/14)	12	PAM-1 (07/17/14)	22	PAM-1D (07/17/14)DUP	32	
3	PAM-1 (07/16/14)	13	PAM-1D (07/17/14)	23		33	
4	PAM-1D (07/16/14)	14	PAM-2 (07/17/14)	24		34	
5	PAM-2 (07/16/14)	15	PAM-3 (07/17/14)	25		35	
6	PAM-3 (07/16/14)	16	PAM-4 (07/17/14)	26		36	
7	PAM-4 (07/16/14)	17	PAM-21 (07/17/14)	27		37	
8	PAM-21 (07/16/14)	18	PAM-31 (07/17/14)	28		38	
9	PAM-31 (07/16/14)	19	PAM-1 (07/16/14)DUP	29		39	
10	OAM 1 (07/17/14)	20	PAM-1 (07/16/14)DDUP	30		40	

Notes: Dates appended to differentiate between samples

SDG #: 322254G

VALIDATION FINDINGS CHECKLIST

Reviewer: CR
2nd Reviewer: SM

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%~~ 85-115 QC limits?	✓			
Were titrant checks performed as required? (Level IV only)			✓	
Were balance checks performed as required? (Level IV only)			✓	
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. Matrix spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			D only
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.			✓	
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL(≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were ≤ 5X the CRDL.	✓			
V. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

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

LDC# 32225A6

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: G
2nd Reviewer: CM

Inorganics: Method See Cover

Analyte	Concentration (ng/m3)		RPD (≤20)	
	3	4		
Hexavalent Chromium	0.0228	0.0194	16	

Analyte	Concentration (ng/m3)		RPD (≤20)	
	12	13		
Hexavalent Chromium	0.0540	0.0444	20	

\\LDCFILESERVER\Validation\FIELD DUPLICATES\FD_inorganic\32225A6.wpd

LDC #: 35225A6

Validation Findings Worksheet
Initial and Continuing Calibration Calculation Verification

Page: ___ of ___
Reviewer: CY
2nd Reviewer: MM

Method: Inorganics, Method See Cover

The correlation coefficient (r) for the calibration of Cr6+ was recalculated. Calibration date: 7/21/14

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

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

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

Type of analysis	Analyte	Standard	Conc. (ng/mL)	Area	Recalculated r or r^2	Reported r or r^2	Acceptable (Y/N)
Initial calibration	Cr6+	s1	0.1	0.0000183	*0.99990*	0.99989	Y
		s2	0.1	0.0000432			
		s3	0.2	0.0000809			
		s4	0.5	0.0002022			
		s5	1	0.0004093			
		s6	2	0.00084			
Calibration verification		ICV	True 0.5	Found (ng/mL) 0.5047	101	—	
Calibration verification		CCV (14'32)		0.5172	103	—	
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 #: 32225A

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Reviewer: QR
2nd Reviewer: SM

METHOD: Inorganics, Method seecover

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

%R = Found / True x 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 = |S-D| / (S+D)/2 x 100 Where, S = Original sample concentration
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated %R / RPD	Reported %R / RPD	Acceptable (Y/N)
19 ~~LCSA~~	~~Laboratory control~~ sample Duplicate	Cr6+	0.0195 mg/m3	0.0228 mg/m3	15.6	15.8	Y
N	Matrix spike sample		(SSR-SR)				
LCS	~~Duplicate~~ sample Laboratory control	Cr6+	1.04 mg/mL	1.00 mg/mL	104	104	Y

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

LDC #: 35225A6

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

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

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 12: C6 CAT reported with a positive detect were recalculated and verified using the following equation:

Concentration = Recalculation:

$cy = 0.0004199 - 0.00000373$

$\frac{0.0000456 + 0.00000373}{0.0004199} \times \frac{10\,mL}{21.74\,m^3} =$

$0.054041\,ng/m^3$

#	Sample ID	Analyte	Reported Concentration (ng/m3)	Calculated Concentration (ng/m3)	Acceptable (Y/N)
	1	CAT	0.0135	0.0134	Y
	2		0.0271	0.0271	
	3		0.0228	0.0228	
	4		0.0194	0.0194	
	5		0.0270	0.0270	
	6		0.0208	0.0208	
	7		0.0283	0.0283	
	10		0.0415	0.0415	
	11		0.0154	0.0159	
	12		0.0540	0.0546	
	13		0.0444	0.0444	
	14		0.0369	~~0.0380~~ 0.0368	
	15		0.0106	0.0106	
	16		0.0171	0.0171	

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: 07/22/14 13:48
SUBMITTED: 07/17/14 to 07/18/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: OAM 1 **Lab ID:** 4071701-01 **Sampled:** 07/16/14 16:10
Matrix: Air **Sample Volume:** 21.13 m^3 **Received:** 07/17/14 10:17
Comments: Start Time 7/15/14 16:41 **Analysis Date:** 07/21/14 14:12

Hexavalent Chromium

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

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: 07/22/14 13:48
SUBMITTED: 07/17/14 to 07/18/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: OAM 2 **Lab ID:** 4071701-02 **Sampled:** 07/16/14 16:35
Matrix: Air **Sample Volume:** 21.11 m^3 **Received:** 07/17/14 10:17
Comments: Start Time 7/15/14 17:08 **Analysis Date:** 07/21/14 14:22

Hexavalent Chromium

Analyte	CAS Number	Results ng/m^3 Air	Flag	MDL ng/m^3 Air
Hexavalent Chromium	1854-02-99	0.0271		0.0036

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: 07/22/14 13:48
SUBMITTED: 07/17/14 to 07/18/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1 **Lab ID:** 4071701-03 **Sampled:** 07/16/14 18:30
Matrix: Air **Sample Volume:** 21.2 m^3 **Received:** 07/17/14 10:17
Comments: Col 1 Start Time 7/15/14 18:57 **Analysis Date:** 07/21/14 12:53

Hexavalent Chromium

Analyte	CAS Number	Results ng/m^3 Air	Flag	MDL ng/m^3 Air
Hexavalent Chromium	1854-02-99	0.0228		0.0036

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: 07/22/14 13:48
SUBMITTED: 07/17/14 to 07/18/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1D **Lab ID:** 4071701-04 **Sampled:** 07/16/14 18:38
Matrix: Air **Sample Volume:** 21.4 m^3 **Received:** 07/17/14 10:17
Comments: Col 2 Start Time 7/15/14 18:51 **Analysis Date:** 07/21/14 13:13

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0194		0.0036

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: 07/22/14 13:48
SUBMITTED: 07/17/14 to 07/18/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-2 **Lab ID:** 4071701-05 **Sampled:** 07/16/14 18:02
Matrix: Air **Sample Volume:** 21.14 m^3 **Received:** 07/17/14 10:17
Comments: Start Time 7/15/14 18:33 **Analysis Date:** 07/21/14 14:52

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0270		0.0036

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: 07/22/14 13:48
SUBMITTED: 07/17/14 to 07/18/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-3 **Lab ID:** 4071701-06 **Sampled:** 07/16/14 17:42
Matrix: Air **Sample Volume:** 21.36 m^3 **Received:** 07/17/14 10:17
Comments: Start Time 7/15/14 17:58 **Analysis Date:** 07/21/14 15:02

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0208		0.0036

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: 07/22/14 13:48
SUBMITTED: 07/17/14 to 07/18/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-4 **Lab ID:** 4071701-07 **Sampled:** 07/16/14 17:16
Matrix: Air **Sample Volume:** 21.23 m^3 **Received:** 07/17/14 10:17
Comments: Start Time 7/15/14 17:41 **Analysis Date:** 07/21/14 15:12

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0283		0.0036

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: 07/22/14 13:48
SUBMITTED: 07/17/14 to 07/18/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-21 **Lab ID:** 4071701-08 **Sampled:** 07/16/14 00:00
Matrix: Air **Sample Volume:** 21.14 m^3 **Received:** 07/17/14 10:17
Comments: No CoC sent with sample. **Analysis Date:** 07/21/14 15:22

Hexavalent Chromium

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

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: 07/22/14 13:48
SUBMITTED: 07/17/14 to 07/18/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-31 **Lab ID:** 4071701-09 **Sampled:** 07/16/14 00:00
Matrix: Air **Sample Volume:** 21.36 m^3 **Received:** 07/17/14 10:17
Comments: **Analysis Date:** 07/21/14 15:32

Hexavalent Chromium

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

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: 07/22/14 13:48
SUBMITTED: 07/17/14 to 07/18/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: OAM 1 **Lab ID:** 4071830-01 **Sampled:** 07/17/14 16:39
Matrix: Air **Sample Volume:** 21.95 m^3 **Received:** 07/18/14 11:05
Comments: Start Time 7/16/14 16:16 **Analysis Date:** 07/21/14 15:42

Hexavalent Chromium

Analyte	CAS Number	Results ng/m³ Air	Flag	MDL ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0415		0.0036

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: 07/22/14 13:48
SUBMITTED: 07/17/14 to 07/18/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: OAM 2 **Lab ID:** 4071830-02 **Sampled:** 07/17/14 17:08
Matrix: Air **Sample Volume:** 22.01 m^3 **Received:** 07/18/14 11:05
Comments: Start Time 7/16/14 16:40 **Analysis Date:** 07/21/14 15:52

Hexavalent Chromium

Analyte	CAS Number	Results ng/m^3 Air	Flag	MDL ng/m^3 Air
Hexavalent Chromium	1854-02-99	0.0154		0.0036

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: 07/22/14 13:48
SUBMITTED: 07/17/14 to 07/18/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1 **Lab ID:** 4071830-03 **Sampled:** 07/17/14 18:46
Matrix: Air **Sample Volume:** 21.74 m^3 **Received:** 07/18/14 11:05
Comments: Col 1 Start Time 7/16/14 18:37 **Analysis Date:** 07/21/14 13:32

Hexavalent Chromium

Analyte	CAS Number	Results ng/m^3 Air	Flag	MDL ng/m^3 Air
Hexavalent Chromium	1854-02-99	0.0540		0.0036

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: 07/22/14 13:48
SUBMITTED: 07/17/14 to 07/18/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-1D **Lab ID:** 4071830-04 **Sampled:** 07/17/14 18:53
Matrix: Air **Sample Volume:** 21.74 m^3 **Received:** 07/18/14 11:05
Comments: Col 2 Start Time 7/16/14 18:43 **Analysis Date:** 07/21/14 13:52

Hexavalent Chromium

Analyte	CAS Number	Results ng/m^3 Air	Flag	MDL ng/m^3 Air
Hexavalent Chromium	1854-02-99	0.0444		0.0036

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: 07/22/14 13:48
SUBMITTED: 07/17/14 to 07/18/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-2 **Lab ID:** 4071830-05 **Sampled:** 07/17/14 18:24
Matrix: Air **Sample Volume:** 21.81 m^3 **Received:** 07/18/14 11:05
Comments: Start Time 7/16/14 18:10 **Analysis Date:** 07/21/14 16:01

Hexavalent Chromium

Analyte	CAS Number	Results ng/m^3 Air	Flag	MDL ng/m^3 Air
Hexavalent Chromium	1854-02-99	0.0369		0.0036

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: 07/22/14 13:48
SUBMITTED: 07/17/14 to 07/18/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-3 **Lab ID:** 4071830-06 **Sampled:** 07/17/14 18:06
Matrix: Air **Sample Volume:** 21.83 m^3 **Received:** 07/18/14 11:05
Comments: Start Time 7/16/14 17:50 **Analysis Date:** 07/21/14 16:11

Hexavalent Chromium

Analyte	CAS Number	Results ng/m^3 Air	Flag	MDL ng/m^3 Air
Hexavalent Chromium	1854-02-99	0.0106		0.0036

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: 07/22/14 13:48
SUBMITTED: 07/17/14 to 07/18/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-4 **Lab ID:** 4071830-07 **Sampled:** 07/17/14 17:45
Matrix: Air **Sample Volume:** 21.87 m^3 **Received:** 07/18/14 11:05
Comments: Start Time 7/16/14 17:27 **Analysis Date:** 07/21/14 16:21

Hexavalent Chromium

Analyte	CAS Number	Results ng/m^3 Air	Flag	MDL ng/m^3 Air
Hexavalent Chromium	1854-02-99	0.0171		0.0036

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: 07/22/14 13:48
SUBMITTED: 07/17/14 to 07/18/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-21 **Lab ID:** 4071830-08 **Sampled:** 07/17/14 00:00
Matrix: Air **Sample Volume:** 21.81 m^3 **Received:** 07/18/14 11:05
Comments: **Analysis Date:** 07/21/14 16:51

Hexavalent Chromium

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

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: 07/22/14 13:48
SUBMITTED: 07/17/14 to 07/18/14
AQS SITE CODE:
SITE CODE: Honeywell Hex Chrome Study

Description: PAM-31 **Lab ID:** 4071830-09 **Sampled:** 07/17/14 00:00
Matrix: Air **Sample Volume:** 21.83 m^3 **Received:** 07/18/14 11:05
Comments: **Analysis Date:** 07/21/14 17:01

Hexavalent Chromium

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