

LABORATORY DATA CONSULTANTS, INC.

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

ERM

January 15, 2015

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

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

Dear Mr. Boggs,

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

LDC Project #33488:

SDG

Fraction

5010643

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

214 pages-SF 1 WEEK TAT Attachment 1 LDC #33488 (ERM - Morrisville, NC / Harbor Point, MD, Hexavalent Chromium Monitoring) Level IV (3) DATE Cr(VI) DATE (D7614) LDC SDG# REC'D DUE Matrix: Air/Water/Soil 01/13/15 01/20/15 35 0 5010643 0 0 0 0 0 0 0 0 0 0 T/CR Total

Laboratory Data Consultants, Inc. Data Validation Report

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

Collection Date: December 31, 2014 through January 5, 2015

LDC Report Date: January 15, 2015

Matrix: Air

Parameters: Hexavalent Chromium

Validation Level: EPA Level IV

Laboratory: Eastern Research Group

Sample Delivery Group (SDG): 5010643

Sample Identification

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

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

Introduction

This data review covers 43 air samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per ASTM D7614 for Hexavalent Chromium.

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

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

The following are definitions of the data qualifiers:

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

I. Technical Holding Times

All technical holding time requirements were met.

II. Initial Calibration

All criteria for the initial calibration were met.

III. Continuing Calibration

Continuing calibration frequency and analysis criteria were met.

IV. Blanks

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

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

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

V. Matrix Spike/Matrix Spike Duplicates

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

VI. Duplicates

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

VII. Laboratory Control Samples

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

VIII. Sample Result Verification

All sample result verifications were acceptable.

IX. Overall Assessment of Data

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

X. Field Duplicates

Samples PAM-1 (12/31/14) and PAM-1D (12/31/14), samples PAM-1 (1/02/15) and PAM-1D (1/02/15), samples PAM-1 (1/03/15) and PAM-1D (1/03/15), and samples PAM-1 (1/05/15) and PAM-1D (1/05/15) were identified as field duplicates. No hexavalent chromium was detected in any of the samples with the following exceptions:

	Concentration (ng/m³) PAM-1 (12/31/14) PAM-1D (12/31/14)				
Analyte			RPD (Limits)	Flags	A or P
Hexavalent chromium	0.0261	0.0251	4 (≤20)	-	-

	Concentration (ng/m³)				
Analyte	PAM-1 (1/02/15)	PAM-1D (1/02/15)	RPD (Limits)	Flags	A or P
Hexavalent chromium	0.0320	0.0329	3 (≤20)	-	-

	Concentrat	ion (ng/m³)	222			
Analyte	PAM-1 (1/03/15)	PAM-1D (1/03/15)	RPD (Limits)	Flags	A or P	
Hexavalent chromium	0.0571	0.0641	12 (≤20)	-	-	

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

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

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

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

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

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

LDC #: 33488A6 VALIDATION COMPLETENESS WORKSHEET SDG #: 5010643 Level IV Laboratory: Eastern Research Group

	Date:	<u>1/14/12</u>
	Page:_	_ \of_ _
	Reviewer:	<u> </u>
2nd	Reviewer:	a

METHOD: (Analyte) Hexavalent Chromium (ASTM D7614)

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

	Validation Area		Comments
1.	Sample receipt/Technical holding times	A	12/31/14-1/5/15
II	Initial calibration	A	
III.	Calibration verification	A	
ĮV	Laboratory Blanks	A	
V	Field blanks	N2	FB=(8)(m)(26)(34) TB=(9)(18)(21/35)
VI.	Matrix Spike/Matrix Spike Duplicates	<i>N</i>	Not Regulied
VII.	Duplicate sample analysis	A	DUP ,
VIII.	Laboratory control samples	A	LUSID
IX.	Field duplicates	SW	FD=(3,4) (12,13) (21,22) (30,31)
X	Sample result verification	A	- / / /
L _{xi} _	Overall assessment of data		

Note:

A = Acceptable

N = Not provided/applicable SW = See worksheet ND = No compounds detected

R = Rinsate FB = Field blank D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank OTHER:

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

VALIDATION COMPLETENESS WORKSHEET

Level IV

SDG #: 5010643
Laboratory: Eastern Research Group

LDC #: 33488A6

Page: 2 of 2 Reviewer: 50 2nd Reviewer: 61

METHOD: (Analyte) Hexavalent Chromium (ASTM D7614)

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

LDC#: 33488146

VALIDATION FINDINGS CHECKLIST

Page: _of _ Reviewer: _S_ 2nd Reviewer:

Method: Inorganics (FPA Method See Carre)

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 99-110% QC limits?	/			
Were titrant checks performed as required? (Level IV only)				
Were balance checks performed as required? (Level IV only)				
III. Blanks				
Was a method blank associated with every sample in this SDG?	/			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		\		
IV. Matrix spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.				
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	9		/	
Were the MS/MSD or duplicate relative percent differences (RPD) \leq 20% for waters and \leq 35% for soil samples? A control limit of \leq CRDL(\leq 2X CRDL for soil) was used for samples that were \leq 5X the CRDL, including when only one of the duplicate sample values were \leq 5X the CRDL.	/			
V. Laboratory control samples		•		
Was an LCS 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 FINDINGS CHECKLIST

Page: 2 of 2 Reviewer: 50 2nd Reviewer:

Validation Area	Yes	No	NA	Findings/Comments
VII. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	1			
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#<u>33488A6</u>

VALIDATION FINDINGS WORKSHEET

Field Duplicates

Inorganics: Method See Cover

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

	Concentrati	222	01	
Analyte	12	13	RPD (≤20)	Qual.
Hexavalent Chromium	0.0320	0.0329	3	

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

\LDCFILESERVER\Validation\FIELD DUPLICATES\FD_inorganic\33488A6.wpd

LDC #: 3348846

Validation Findings Worksheet Initial and Continuing Calibration Calculation Verification

Page:\	<u>_</u> of
Reviewer:	QZ
2nd Reviev	ver: 9

Method: Inorganics, Method <u>See Cover</u>	
The correlation coefficient (r) for the calibration of was recalculated. Calibration date: \(\sigma \)\(\sigma \)\(\sigma \)	

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

%R = <u>Found X 100</u>

Where,

Found = concentration of each analyte <u>measured</u> in the analysis of the ICV or CCV solution

True

True = concentration of each analyte in the ICV or CCV source

					Recalculated	Reported	Acceptable
Type of analysis	Analyte	Standard	Conc. (ng/ml)	Area	r or r ²	r or r ²	(Y/N)
Initial calibration		s1	0.05	0.0000123			
		s2	0.1	0.0000323	0.99920	0.99920	
	CXX	s3	0.2	0.0000784			
		s4	0.5	0.0002107]		4
		s5	1	0.0003887			\supset
		s6	2	0.0008471			
Teシー ハンコ Calibration verification	Cray	Ford O. Signalm	True 0. Snglml		102.8%R	102-89.R	
CC V2.26 Calibration verification	Crth	0.5165ng/ml	a. Single		1033%	-103.382	
Calibration verification							

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree withi
0.0% of the recalculated results

LDC #: 33488AV

VALIDATION FINDINGS WORKSHEET Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: <u>るり</u>
2nd Reviewer:

	METHOD: Inorganics,	Method	See	Cover	
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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:

 $RPD = \underline{[S-D]} \times 100$

Where,

S =

Original sample concentration

(S+D)/2

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)
11:57	Laboratory control sample	طيد	1.05 ng/m1	1-00ng/ml	105%R	1059.R	2
N	Matrix spike sample		(SSR-SR)				
15,2P DNS	Duplicate sample	Crass	0.0252mg/m3	0.0262 mg/m³	3.89%	3,53%.RPD	7)

Comments: _	 			
		•	_	

LDC#: 33488AV

VALIDATION FINDINGS WORKSHEET

Sample Calculation Verification

Page:_	(_of_	Z
Reviewer:	2	35	5
nd reviewer: -		<u></u>	

METHOD: Inorganics, Method	See Cover			
Y N N/A Are results within	or all questions answere on reported and calculat on the calibrated range of limits below the CRQL?	ted correctly? f the instrument	•	fied as "N/A".
Compound (analyte) results for _ recalculated and verified using th	,	2+6	reported w	ith a positive detect were
Concentration = $(A-C_0)C_1$	W=10m/ Recalculary 13 = 21.34	ation: (0.00	320.1-)-(8P00000 04SV000.0	-05) - 0.0479 ng/ml
C1=0.0004240	(nglm1)(cf)	(O.047A.	ng/m1) (10m1) = ():224 ng/m³

#	Sample ID	Analyte	Reported Concentration (水小)	Calculated Concentration (va)m ²)	Acceptable (Y/N)
	l	C+10	au au	20	3
	2		0.0224	0-0224	7
	3		0.0261	0.0262	734
	ŭ		0.0251	0.0252	3x
			0.0312	0.313	3 *
	6		<i>ND</i>	とり	2
	7		0.0316	0.0316	1
	8		DQ	60	
	ς		00	OU	
	lò		100	<i>PO</i>	
	11		0.0238	0.0238	4
	12		0.0320	0.0321	97×
	13		0.0829	0.0329	<u>5</u>
	14		0.0220	0.0221	4*
	- 15		NO	NO	3)
	16		0-0401	0.0401	
			PD	20	
	18		Qu	20	1
	19	•	0.0403	0.0403	7)
	20	\	0.0536	0.0536	7

Note:_	*Rounding				
)			
				-	

LDC #: 33488AVO

VALIDATION FINDINGS WORKSHEET

Sample Calculation Verification

Page:	<u>Zof Z</u>
Reviewer:_	30
2nd reviewer:_	

MET	HOD: Ino	rganics, Metho	d <u>See</u>	Cover	<u> </u>			_	
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A". Y N N/A									
	recalculated and verified using the following equation: Concentration = $(A co) / C$, WE so where $(C coss) - (-1.25E - 05)$ WE so where $(C coss) - (-1.25E - 05)$								
		Aco)/C,	Ufal	の叫 Recalc 2173	ulation: (0,000	0.000387 50000387	(C = 0Z)	0.1242~	ماسا
ı		5 E-05 .000382	(,,,),,	(20)(12	_	0.000			_
		250 000 . 250 000 .		m3		+2 ng/m/) (19 21:73 n	$\frac{7}{\sqrt{3}} = 0$	0571 ng/m	ح

#	Sample ID	Analyte	Reported Concentration (५०)५४)	Calculated Concentration (va) w ²)	Acceptable (Y/N)
	21	Cr+10	0.0571	0.0571	7
	22)	0.0641	0.064)	3
	23		0.0792	0.072	4
	24		4240.0	0.0453	4×
	25		0.0600	0.0599	9*
	26		00	ND	y
	27		ND	CU	
	78		8810.0	0.0188	
	29		64	<i>PD</i>	
	30		20	2	
	31		20	20	
	32		20	<i>QU</i>	
	33		0.0253	0.0253	
	34		69	60	
	34 35	4	20	G	7

Note:_	外节	200ns	7.				
_	*			 			
			_	 	 	 	



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

01/13/15 13:17 01/06/15

SUBMITTED:

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Analysis Date: 01/07/15 14:47

Description: Matrix:

OAM 1

Lab ID:

Sample Volume:

5010643-01

21.24

m³

Sampled: 12/31/14 14:25 Received: 01/06/15 11:49

Comments: Start Time 12/30/14 14:49

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

Analyte Hexavalent Chromium **CAS Number**

ng/m³ Air

Flag

ng/m³ Air

1854-02-99

ND

0.0036

JAN 1 5 2015



Environmental Resources Management, Inc.

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Matrix:

Start Time 12/30/14 15:14

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

01/13/15 13:17 01/06/15

SUBMITTED:

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

OAM 2

Lab ID:

Sample Volume:

5010643-02

m³

Sampled: 12/31/14 14:57 Received: 01/06/15 11:49

Analysis Date: 01/07/15 14:57

Hexavalent Chromium by SOP ERG-MOR-063

21.34

Results

<u>MDL</u>

Analyte

CAS Number

ng/m³ Air

<u>Flag</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0224

0.0036

JAN 1 5 2015



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Matrix:

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

01/13/15 13:17

SUBMITTED:

01/06/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

PAM-1

Lab ID:

Sample Volume:

5010643-03

20.97

Sampled: 12/31/14 15:37

Received: 01/06/15 11:49 Analysis Date: 01/07/15 14:06

Comments: Col 1 Start Time 12/30/14 16:31

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte Hexavalent Chromium **CAS Number**

ng/m³ Air

<u>Flag</u>

ng/m³ Air

1854-02-99

0.0261

0.0036

JAN 1 5 2015



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Matrix:

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

01/13/15 13:17 01/06/15

SUBMITTED:

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Analysis Date: 01/07/15 13:06

Description:

PAM-1D

Lab ID:

Sample Volume:

5010643-04

Sampled: 12/31/14 15:38

Received: 01/06/15 11:49

Comments:

Col 2 Start Time 12/30/14 16:32

Hexavalent Chromium by SOP ERG-MOR-063

20.79

Results

MDL

Analyte

CAS Number

ng/m³ Air

<u>Flag</u>

m³

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0251

0.0036

JAN 1 5 2015



Environmental Resources Management, Inc.

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

Description:

Comments:

ATTN: Mr. Jeff Boggs

Matrix:

PHONE: (443) 803-8495

PAM-2

Start Time 12/30/14 16:10

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

01/13/15 13:17

SUBMITTED: 01/06/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Sampled: 12/31/14 15:28

Lab ID:

Sample Volume:

20.97

Received: 01/06/15 11:49

Analysis Date: 01/07/15 15:06

Hexavalent Chromium by SOP ERG-MOR-063

5010643-05

Results

MDL

Analyte Hexavalent Chromium

CAS Number 1854-02-99

ng/m³ Air 0.0312

Flag

ng/m³ Air 0.0036

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01/13/15 13:17

SUBMITTED: 01/06/15

AQS SITE

SITE CODE:

Flag

Honeywell Hex Chrome Study

Description:

PAM-3

Lab ID:

Sample Volume:

5010643-06

21.04

Sampled: 12/31/14 15:21 Received: 01/06/15 11:49

Analysis Date: 01/07/15 15:16

Start Time 12/30/14 15:58

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte Hexavalent Chromium

CAS Number 1854-02-99

ng/m³ Air ND

ng/m³ Air

0.0036

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REPORTED:

01/13/15 13:17

SUBMITTED: 01/06/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description: Matrix:

PAM-4

Lab ID:

Sample Volume:

5010643-07

m³

Sampled: 12/31/14 15:13

Comments:

Start Time 12/30/14 15:36

21.25

Received: 01/06/15 11:49 Analysis Date: 01/07/15 17:25

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte Hexavalent Chromium **CAS Number**

ng/m³ Air

Flag

ng/m³ Air

1854-02-99

0.0316

0.0036

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REPORTED:

01/13/15 13:17

01/06/15 SUBMITTED:

AQS SITE

SUPECODE:

Honeywell Hex Chrome Study

Description: Matrix:

Comments:

PAM-21

Air

Lab ID:

Sample Volume:

5010643-08

m³

Sampled: 12/31/14 00:00 Received: 01/06/15 11:49

Analysis Date: 01/07/15 15:36

Hexavalent Chromium by SOP ERG-MOR-063

20.97

Results

<u>MDL</u>

Analyte

CAS Number

ng/m³ Air

Flag

ng/m³ Air

* Hexavalent Chromium

1854-02-99

0.0036

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FILE #: 3926.00

REPORTED: 01/13/15 13:17

SUBMITTED: 01/06/15

AQS SITE

SODE:

Honeywell Hex Chrome Study

Description:

Comments:

Malvern, PA 19355

PAM-31

Lab ID:

Sample Volume:

5010643-09

21.04

m³

Sampled: 12/31/14 00:00 Received: 01/06/15 11:49

Analysis Date: 01/07/15 15:46

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

ng/m³ Air

ng/m³ Air

Hexavalent Chromium

1854-02-99

ND

<u>Flag</u>

0.0036

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Start Time 1/1/15 14:46

FILE #: REPORTED:

01/13/15 13:17

3926.00

SUBMITTED:

01/06/15

AQS SITE

CODE:

Honeywell Hex Chrome Study

Description: Matrix:

Comments:

OAM 1

Lab ID:

Sample Volume:

5010643-10

Sampled: 01/02/15 14:30 Received: 01/06/15 11:49

Analysis Date: 01/07/15 15:56

Hexavalent Chromium by SOP ERG-MOR-063

21.36

Results

MDL

Analyte

CAS Number

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

ND

0.0036

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FILE #: 3926.00

REPORTED: SUBMITTED: 01/13/15 13:17 01/06/15

AQS SITE

SODE:

Honeywell Hex Chrome Study

Description:

OAM 2 Air

Lab ID:

Sample Volume:

5010643-11

21.46 m³ Sampled: 01/02/15 14:52

Received: 01/06/15 11:49 Analysis Date: 01/07/15 16:06

Comments:

Matrix:

Start Time 1/1/15 15:01

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

Analyte

CAS Number

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0238

0.0036

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REPORTED:

01/13/15 13:17

01/06/15 SUBMITTED:

AQS SITE

SODE:

Honeywell Hex Chrome Study

Description: PAM-1

Lab ID:

5010643-12

Sampled: 01/02/15 15:52 Received: 01/06/15 11:49

Matrix: Comments:

Col 1 Start Time 1/1/15 15:57

Sample Volume:

21.52

m³

Analysis Date: 01/07/15 13:26

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

Analyte Hexavalent Chromium **CAS Number** 1854-02-99

ng/m³ Air

<u>Flag</u>

ng/m³ Air

0.0320 0.0036

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Col 2 Start Time 1/1/15 15:57

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

01/13/15 13:17

SUBMITTED:

01/06/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description: Matrix:

PAM-1D

Air

Lab ID:

Sample Volume:

5010643-13

21.58

m³

Flag

Sampled: 01/02/15 15:56 Received: 01/06/15 11:49

Analysis Date: 01/07/15 17:56

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

Analyte Hexavalent Chromium

Comments:

CAS Number 1854-02-99

ng/m³ Air 0.0329

ng/m³ Air

0.0036

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REPORTED:

01/13/15 13:17

01/06/15 SUBMITTED:

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

PAM-2

Lab ID:

Sample Volume:

5010643-14

m³

Sampled: 01/02/15 15:40

Matrix: Air

Start Time 1/1/15 15:48

21.48

Received: 01/06/15 11:49

Analysis Date: 01/07/15 16:16

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0220

0.0036

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Matrix:

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FILE #: 3926.00

REPORTED:

01/13/15 13:17

SUBMITTED: 01/06/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

PAM-3

Lab ID:

Sample Volume:

5010643-15

Sampled: 01/02/15 15:30 Received: 01/06/15 11:49

Analysis Date: 01/07/15 16:46

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

Hexavalent Chromium by SOP ERG-MOR-063

21.65

Results

MDL

Analyte

CAS Number

ng/m³ Air

<u>ng/m³ Air</u>

Hexavalent Chromium

1854-02-99

ND

<u>Flag</u>

0.0036

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REPORTED: 01/13/15 13:17

SUBMITTED: 01/06/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

PAM-4

Lab ID:

5010643-16

Sampled: 01/02/15 15:08 Received: 01/06/15 11:49

Matrix: Comments:

Start Time 1/1/15 15:18

Sample Volume: 21.45

Analysis Date: 01/07/15 16:55

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte Hexavalent Chromium

CAS Number 1854-02-99

ng/m³ Air

<u>Flag</u>

ng/m³ Air

0.0401

0.0036

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SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

PAM-21

Lab ID:

5010643-17

Sampled: 01/02/15 00:00

Matrix:

Air

Sample Volume:

m³

Received: 01/06/15 11:49

Analysis Date: 01/07/15 17:05

Hexavalent Chromium by SOP ERG-MOR-063

21.48

Results

MDL

Analyte

CAS Number

ng/m³ Air

<u>Flag</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0036

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FILE #:

3926.00

REPORTED:

01/13/15 13:17 01/06/15

SUBMITTED:

AQS SITE

SITE CODE:

m³

Honeywell Hex Chrome Study

Description:

PAM-31

Lab ID:

Sample Volume:

5010643-18

21.65

Sampled: 01/02/15 00:00 Received: 01/06/15 11:49

Analysis Date: 01/07/15 17:15

Matrix: Comments:

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte Hexavalent Chromium CAS Number 1854-02-99

ng/m³ Air ND

<u>Flag</u>

ng/m³ Air 0.0036

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FILE #: 3926.00

REPORTED:

01/13/15 13:17 01/06/15

SUBMITTED:

AQS SITE

SITE CODE:

m³

Honeywell Hex Chrome Study

Description:

Matrix:

OAM 1

Air

Lab ID:

Sample Volume:

5010643-19

21.27

Sampled: 01/03/15 14:11

Received: 01/06/15 11:49 **Analysis Date:** 01/08/15 16:44

Comments:

Start Time 1/2/15 14:33

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

<u>Analyte</u>

CAS Number

<u>ng/m³ Air</u>

Flag

<u>ng/m³ Air</u>

Hexavalent Chromium

1854-02-99

0.0403

0.0036

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FILE #: 3926.00

REPORTED:

01/13/15 13:17 01/06/15

SUBMITTED:

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description: Matrix:

OAM 2

Start Time 1/2/15 14:55

Lab ID:

Sample Volume:

5010643-20

Sampled: 01/03/15 14:56 Received: 01/06/15 11:49

Analysis Date: 01/08/15 14:25

Hexavalent Chromium by SOP ERG-MOR-063

21.36

Results

MDL

Analyte

CAS Number

ng/m³ Air

<u>Flag</u>

<u>nq/m³ Air</u>

Hexavalent Chromium

Comments:

1854-02-99

0.0536

0.0036

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Col 1 Start Time 1/2/15 15:56

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FILE #:

3926.00

REPORTED: SUBMITTED: 01/13/15 13:17

01/06/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description: Matrix:

Comments:

PAM-1

Lab ID:

Sample Volume:

5010643-21

<u>Flag</u>

Sampled: 01/03/15 16:04 Received: 01/06/15 11:49

Analysis Date: 01/08/15 12:16

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte Hexavalent Chromium **CAS Number** 1854-02-99

ng/m³ Air 0.0571

21.73

<u>ng/m³ Air</u>

0.0036

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Col 2 Start Time 1/2/15 15:59

FILE #: 3926.00

REPORTED:

01/13/15 13:17

SUBMITTED: 01/06/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description: Matrix:

Comments:

PAM-1D

Lab ID:

Sample Volume:

5010643-22

m³

Sampled: 01/03/15 16:00 Received: 01/06/15 11:49

Analysis Date: 01/08/15 13:35

Hexavalent Chromium by SOP ERG-MOR-063

21.74

Results

MDL

Analyte

CAS Number

ng/m³ Air

<u>Flag</u>

<u>ng/m³ Air</u>

Hexavalent Chromium

1854-02-99

0.0641

0.0036

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REPORTED:

01/13/15 13:17

SUBMITTED: 01/06/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description: Matrix:

PAM-2

Lab ID:

Sample Volume:

5010643-23

m³

Sampled: 01/03/15 15:44

Analysis Date: 01/08/15 16:54

Received: 01/06/15 11:49

Air Comments: Start Time 1/2/15 15:44

Hexavalent Chromium by SOP ERG-MOR-063

21.59

Results

<u>MDL</u>

Analyte

CAS Number

ng/m³ Air

<u>Flag</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0792

0.0036

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Start Time 1/2/15 15:34

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: SUBMITTED: 01/13/15 13:17

01/06/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description: Matrix:

Comments:

PAM-3

Air

Lab ID:

Sample Volume:

5010643-24

21.51

Sampled: 01/03/15 15:34 Received: 01/06/15 11:49

Analysis Date: 01/08/15 14:45

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

Analyte

CAS Number

ng/m³ Air

<u>Flag</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0454

0.0036

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Page 27 of 40



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10642.25

21.5

Honeywell Hex Chrome Study

Description:

PAM-4

Lab ID:

5010643-25

Sampled: 01/03/15 15:05

Matrix:

Air

Sample Volume:

m³

Received: 01/06/15 11:49 **Analysis Date:** 01/08/15 14:55

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

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

<u>Analyte</u>

CAS Number

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0600

0.0036

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FILE #: 3926.00

REPORTED:

01/13/15 13:17

01/06/15 SUBMITTED:

AQS SITE

SODE:

Honeywell Hex Chrome Study

Description: Matrix:

Comments:

PAM-21

Air

Lab ID:

Sample Volume:

5010643-26

m³

Sampled: 01/03/15 00:00 Received: 01/06/15 11:49

Analysis Date: 01/08/15 15:05

Hexavalent Chromium by SOP ERG-MOR-063

21.59

Results

MDL

Analyte

CAS Number

ng/m³ Air

<u>Flag</u>

ng/m³ Air

Hexavalent Chromium 1854-02-99 ND 0.0036

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REPORTED: SUBMITTED: 01/13/15 13:17

01/06/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description: Matrix:

Comments:

PAM-31

Lab ID:

Sample Volume:

5010643-27

Sampled: 01/03/15 00:00

Received: 01/06/15 11:49 Analysis Date: 01/08/15 15:15

Hexavalent Chromium by SOP ERG-MOR-063

21.51

Results

MDL

Analyte Hexavalent Chromium **CAS Number**

ng/m³ Air

<u>Flag</u>

ng/m³ Air

1854-02-99

ND

0.0036

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REPORTED:

01/13/15 13:17

SUBMITTED: 01/06/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description: Matrix:

OAM 1

Air

Lab ID:

Sample Volume:

5010643-28

m³

Sampled: 01/05/15 15:13

Received: 01/06/15 11:49 Analysis Date: 01/08/15 17:04

Comments:

Start Time 1/4/15 15:10

Hexavalent Chromium by SOP ERG-MOR-063

21.64

Results

MDL

Analyte

CAS Number

ng/m³ Air

<u>Flaq</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0188

0.0036

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FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: SUBMITTED: 01/13/15 13:17

01/06/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description: Matrix:

OAM 2

Air

Lab ID:

Sample Volume:

5010643-29

m³

Sampled: 01/05/15 15:35

Received: 01/06/15 11:49 Analysis Date: 01/08/15 15:35

Hexavalent Chromium by SOP ERG-MOR-063

21.81

Results

<u>MDL</u>

Analyte

CAS Number

ng/m³ Air

ng/m³ Air

Hexavalent Chromium

1854-02-99

ND

<u>Flag</u>

0.0036

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PHONE: (443) 803-8495

Air

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

01/13/15 13:17

SUBMITTED: 01/06/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

PAM-1 Description: Matrix:

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

Lab ID: Sample Volume:

5010643-30

m³

Sampled: 01/05/15 16:34 Received: 01/06/15 11:49

Analysis Date: 01/08/15 12:55

Hexavalent Chromium by SOP ERG-MOR-063

22.23

Results

<u>MDL</u>

Analyte

CAS Number

ng/m³ Air

<u>Flag</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

ND

0.0036

JAN 1 5 2015

Initials: CR

Eastern Research Group

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

Page 33 of 40



Environmental Resources Management, Inc.

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Air

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

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

01/13/15 13:17

SUBMITTED: 01/06/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

Matrix:

Comments:

PAM-1D

Lab ID:

Sample Volume:

5010643-31

22.27 m³ Sampled: 01/05/15 16:37 Received: 01/06/15 11:49

Analysis Date: 01/08/15 13:15

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium 1854-02-99 ND 0.0036

JAN 1 5 2015

Initials: CR

Eastern Research Group

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Page 34 of 40



Environmental Resources Management, Inc.

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

Comments:

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Start Time 1/4/15 15:40

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

01/13/15 13:17

SUBMITTED: 01/06/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description: Matrix:

PAM-3

Lab ID:

Sample Volume:

5010643-33

22.15 m³ Sampled: 01/05/15 16:17 Received: 01/06/15 11:49

Analysis Date: 01/08/15 15:45

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte Hexavalent Chromium **CAS Number**

ng/m³ Air

ng/m³ Air

1854-02-99

ND

Flag

0.0036

JAN 1 5 2015

Initials: CR

Eastern Research Group

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Page 35 of 40



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

01/13/15 13:17

SUBMITTED: 01/06/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description: Matrix:

Comments:

PAM-4

Start Time 1/4/15 15:34

Air

Lab ID:

Sample Volume:

5010643-34

m³

Sampled: 01/05/15 15:52 Received: 01/06/15 11:49

Analysis Date: 01/08/15 17:37

Hexavalent Chromium by SOP ERG-MOR-063

21.87

Results

MDL.

Analyte

CAS Number

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0253

0.0036

!AN 1 5 2015

Initials: CR

Eastern Research Group

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Page 36 of 40



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Air

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

01/13/15 13:17

01/06/15 SUBMITTED:

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description: Matrix:

PAM-21

Lab ID:

Sample Volume:

5010643-35

Sampled: 01/05/15 00:00

Analysis Date: 01/08/15 16:24

Received: 01/06/15 11:49

Comments:

Hexavalent Chromium by SOP ERG-MOR-063

22.15

Results

MDL

Analyte Hexavalent Chromium **CAS Number** 1854-02-99

ng/m³ Air ND

<u>Flag</u>

ng/m³ Air 0.0036

JAN 1 5 2015

Initials: CR

Eastern Research Group

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

Page 37 of 40



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

01/13/15 13:17

SUBMITTED: 01/06/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description: Matrix:

PAM-31

Lab ID:

5010643-36

m³

Sampled: 01/05/15 00:00

Air Sample Volume: 22.15

Received: 01/06/15 11:49 Analysis Date: 01/08/15 16:34

Comments:

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

Analyte

CAS Number

ng/m³ Air

ng/m³ Air

Hexavalent Chromium 1854-02-99 ND

<u>Flag</u>

0.0036

JAN 1 5 2015

Initials: CR

Eastern Research Group

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

Page 38 of 40



LABORATORY DATA CONSULTANTS, INC.

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

ERM

January 15, 2015

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

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

Dear Mr. Boggs,

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

LDC Project #33502:

SDG

Fraction

5010733/5010816

Hexavalent Chromium

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

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

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

Sincerely,

Christina Rink

Project Manager/Chemist

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Laboratory Data Consultants, Inc. Data Validation Report

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

Collection Date: January 6 through January 7, 2015

LDC Report Date: January 15, 2015

Matrix: Air

Parameters: Hexavalent Chromium

Validation Level: EPA Level IV

Laboratory: Eastern Research Group

Sample Delivery Group (SDG): 5010733/5010816

Sample Identification

OAM 1 (1/06/15) PAM-1 (1/07/15)DUP OAM 2 (1/06/15) PAM-1D (1/07/15)DUP

PAM-1 (1/06/15)

PAM-1D (1/06/15)

PAM-2 (1/06/15)

PAM-3 (1/06/15)

PAM-4 (1/06/15)

PAM-21 (1/06/15)

PAM-31 (1/06/15)

OAM 1 (1/07/15)

OAM 2 (1/07/15)

PAM-1 (1/07/15)

PAM-1D (1/07/15)

PAM-2 (1/07/15)

PAM-3 (1/07/15)

PAM-4 (1/07/15)

PAM-21 (1/07/15)

PAM-31 (1/07/15) PAM-1 (1/06/15)DUP

PAM-1D (1/06/15)DUP

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

Introduction

This data review covers 22 air samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per ASTM D7614 for Hexavalent Chromium.

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

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

The following are definitions of the data qualifiers:

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

I. Technical Holding Times

All technical holding time requirements were met.

II. Initial Calibration

All criteria for the initial calibration were met.

III. Continuing Calibration

Continuing calibration frequency and analysis criteria were met.

IV. Blanks

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

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

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

V. Matrix Spike/Matrix Spike Duplicates

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

VI. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

VII. Laboratory Control Samples

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

VIII. Sample Result Verification

All sample result verifications were acceptable.

IX. Overall Assessment of Data

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

X. Field Duplicates

Samples PAM-1 (1/06/15) and PAM-1D (1/06/15) and samples PAM-1 (1/07/15) and PAM-1D (1/07/15) were identified as field duplicates. No hexavalent chromium was detected in any of the samples with the following exceptions:

	Concentrati	on (ng/m³)			
Analyte	PAM-1 (1/06/15)	PAM-1D (1/06/15)	RPD (Limits)	Flags	A or P
Hexavalent chromium	0.0322	0.0359	11 (≤20)	-	-

	Concentrati	ion (ng/m³)			
Analyte	PAM-1 (1/07/15)	PAM-1D (1/07/15)	RPD (Limits)	Flags	A or P
Hexavalent chromium	0.0140	0.0134	4 (≤20)	-	-

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

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

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

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

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

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

VALIDATION COMPLETENESS WORKSHEET LDC #: 33502A6

SDG #: 5010733/5010816

Laboratory: Eastern Research Group

Level IV

Reviewer: 2nd Reviewer:

METHOD: (Analyte) Hexavalent Chromium (ASTM D7614)

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

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	oilan-onlis
	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	A	
V	Field blanks	NO	FB=(8)(n) TB=(9/18)
VI.	Matrix Spike/Matrix Spike Duplicates	2	Not Required
VII.	Duplicate sample analysis	A	DUR
VIII.	Laboratory control samples	A	LCSID
IX.	Field duplicates	SW	FD = (3,4) (12,13)
X.	Sample result verification	A	
x	Overall assessment of data	\sim	

Note:

A = Acceptable

N = Not provided/applicable SW = See worksheet

ND = No compounds detected

R = Rinsate FB = Field blank D = Duplicate

5010816-08

air

TB = Trip blank EB = Equipment blank

SB=Source blank OTHER:

01/07/15

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

PAM-21(01/07/15)

LDC #: 33502A6 VALID

Laboratory: Eastern Research Group

SDG #: 5010733/5010816

VALIDATION COMPLETENESS WORKSHEET

Level IV

Page: 7 of 7
Reviewer: Jo

Reviewer: JD

2nd Reviewer: CD

METHOD: (Analyte) Hexavalent Chromium (ASTM D7614)

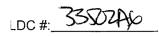
	Client ID	Lab ID	Matrix	Date
18	PAM-31(01/07/15)	5010816-09	air	01/07/15
19	PAM-1(01/06/15)DUP	5010733-03DUP	air	01/06/15
20	PAM-1D(01/06/15)DUP	5010733-04DUP	air	01/06/15
21	PAM-1(01/07/15)DUP	5010816-03DUP	air	01/07/15
22	PAM-1D(01/07/15)DUP	5010816-04DUP	air	01/07/15

Page: of Z Reviewer: 30 2nd Reviewer: 2

Method:Inorganics (EPA Method See (arc)

Method:Inorganics (EPA Method See Love)				
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?	/		<u> </u>	
Were all initial and continuing calibration verification %Rs within the 9 0-116 % QC limits?				
Were titrant checks performed as required? (Level IV only)			/	
Were balance checks performed as required? (Level IV only)			/	
III. Blanks				
Was a method blank associated with every sample in this SDG?	/			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		/		
IV. Matrix spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	\			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.			/	
Were the MS/MSD or duplicate relative percent differences (RPD) \leq 20% for waters and \leq 35% for soil samples? A control limit of \leq CRDL(\leq 2X CRDL for soil) was used for samples that were \leq 5X the CRDL, including when only one of the duplicate sample values were \leq 5X the CRDL.	/			
V. Laboratory control samples				
Was an LCS 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?				

165



VALIDATION FINDINGS CHECKLIST

Page: 2 of 2 Reviewer: 3 (5) 2nd Reviewer:

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

LDC#<u>33502A6</u>

VALIDATION FINDINGS WORKSHEET Field Duplicates

Page: _	<u>\</u> of <u>\</u>
Reviewer:	<u> </u>
2nd Reviewer:	on

Inorganics: Method See Cover

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

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

\\LDCFILESERVER\\Validation\FIELD DUPLICATES\\FD_inorganic\\33502A6.wpd

LDC #: 33502P40

Validation Findings Worksheet Initial and Continuing Calibration Calculation Verification

Page:[_ of_
Reviewer:	30
2nd Review	ver: 📿

Method: Inorganics, Method <u>See Cover</u>
The correlation coefficient (r) for the calibration of was recalculated.Calibration date: 01/3/15
An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

%R = <u>Found X 100</u>

Where,

Found = concentration of each analyte <u>measured</u> in the analysis of the ICV or CCV solution

True

True = concentration of each analyte in the ICV or CCV source

					Recalculated	Reported	Acceptable
Type of analysis	Analyte	Standard	Conc. (ng/ml)	Area	r or r ²	r or r ²	(Y/N)
Initial calibration		s1	0.05	0.0000129			
		s2	0.1	0.0000366	0.99999	0.99999	
		s3	0.2	0.0000818			
	Cxxo	s4	0.5	0.0002099			\mathcal{A}
	•	s5	1	0.0004302)
		s6	2	0.0008687			
JW 11:56	صدي	tound	True				\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
Calibration verification		0.5144 mg/ml	O-Snglan		105-90/2	102982	\mathcal{C}_{\perp}
CW 12:55	صلا م	3 110 == .			00 11		4*
Calibration verification		0.4422mm	0.5 nglud		18.485	98.5%R	
Calibration verification							

Comments: Refer to Calibration	Verification findings worksheet for	list of qualifications and associa	ted samples when reported resu	ılts do not agree within
10.0% of the recalculated results	·			

* Rosuding

LDC#: 33502A60

VALIDATION FINDINGS WORKSHEET Level IV Recalculation Worksheet

	Page:_	<u> </u>	1
	Reviewer:	36	\supset
nd	Reviewer:	G	

METHOD: Inorganics,	Method	se Cover	
Percent recoveries (%	R) for a labora	itory control samp	ole and a matrix spike sample were recalculated using the following formula:
%R = <u>Found</u> x 100 True	Where,	Found = True = cond	concentration of each analyte <u>measured</u> in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result). centration of each analyte in the source.

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

 $RPD = \underline{[S-D]} \times 100$

Where,

S =

Original sample concentration
Duplicate sample concentration

(S+D)/2

D =

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated %R / RPD	Reported %R / RPD	Acceptable (Y/N)
LCS 12:26	Laboratory control sample	Cc+6	1.025 ng/ml	1.00 ng/m/	103%R	103%2	
N	Matrix spike sample		(SSR-SR)				
DUQ 18:26	Duplicate sample	Cc+6	0.0315 ng/m³	0.0323ng/m³	251%R90	2-079-RAD	3*

Comments:	Rounding					_	
		 		 		_	

LDC #: 3350286

VALIDATION FINDINGS WORKSHEET

Sample Calculation Verification

Page:_	<u></u>
Reviewer:_	30
2nd reviewer:_	0

METHOD: Inorganics, Method	See Cover	
N N/A Have results the N N/A Are results with	been reported and calculated correctly thin the calibrated range of the instrum on limits below the CRQL?	
Concentration = A-Co C	if 0 Recalculation: 0.0	77775(-755E56)
Co= -7.75E-06		0.0004381 = 0.029/ng/m
(,=0.0004381	(nglm1 Xul)	(0.020/mg/m)(com) 0.0134 m/m3
20000005	=12/12	(0.034 ng/m3

. #	Sample ID	Analyte	Reported Concentration (火人しょう)	Calculated Concentration (ハムしぶ)	Acceptable (Y/N)
	١	C+46	0.0340	0.0340	7
	2		0.0400	0.0400	7
	Z		0.0322	0.0323	9×
	iq		0.0359	0.0359	2
			8.0420	0.0421	46
	9		0.0402	0.0403	44
	7		0.0340	0.0340	5
	8		NO	ND	
	٩		NO	NO	
	W		NO	NO.	
	<u> </u>		NO	DU	4
	12		0.0140	1410.0	9 x
	13		0.0134	0.0134	52
	14		ND	00	
	15		OCI	700	
	16		0.090	0.000	
	n		ND.	アク	
	18	<u> </u>	CU	20	5
				-	

Note:_	* Romaina		 			
)		 		



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 01/14/15 14:16

Malvern, PA 19355

SUBMITTED:

01/07/15 to 01/08/15

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

FAX: (410) 266-8912

SITE CODE:

Honeywell Hex Chrome Study

Description:

OAM 1

Lab ID: 5010733-01 Sampled: 01/06/15 14:41

Matrix:

Air

Sample Volume:

21.07

Received: 01/07/15 11:23 Analysis Date: 01/13/15 15:18

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

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

ng/m³ Air

<u>Flag</u>

<u>ng/m³ Air</u>

Hexavalent Chromium

1854-02-99

0.0340

0.0036

JAN 1 5 2015

Initials: CR



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 01/14/15 14:16

Malvern, PA 19355

SUBMITTED:

01/07/15 to 01/08/15

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

SITE CODE:

Honeywell Hex Chrome Study

Description:

OAM 2

Lab ID:

5010733-02

Sampled: 01/06/15 15:08

Matrix:

Sample Volume:

Received: 01/07/15 11:23

Comments:

Start Time 1/5/15 15:38

21.16

Analysis Date: 01/13/15 15:28

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

Analyte

CAS Number

FAX: (410) 266-8912

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0400

0.0036

JAN 1 5 2015

Initials: CR

Eastern Research Group

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

Page 4 of 22



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

01/14/15 14:16

SUBMITTED:

01/07/15 to 01/08/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description: Matrix:

Comments:

PAM-1

Lab ID:

Sample Volume:

5010733-03

m³

Sampled: 01/06/15 16:10 Received: 01/07/15 11:23

Analysis Date: 01/13/15 13:16

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

Hexavalent Chromium by SOP ERG-MOR-063

21.18

Results

<u>MDL</u>

Analyte

CAS Number

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0322

0.0036

JAN 1 5 2015

Initials: CR

Eastern Research Group

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

Page 5 of 22



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

Description:

Comments:

Matrix:

PHONE: (443) 803-8495 PAM-1D

Col 2 Start Time 1/5/15 16:40

FAX: (410) 266-8912

Lab ID:

5010733-04

Sample Volume:

21.18

m³

FILE #: 3926.00

REPORTED:

SUBMITTED: AQS SITE

SITE CODE:

Honeywell Hex Chrome Study Sampled: 01/06/15 16:12

Received: 01/07/15 11:23

Analysis Date: 01/13/15 13:36

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

01/14/15 14:16

01/07/15 to 01/08/15

CAS Number

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium

Analyte

1854-02-99

0.0359

0.0036

JAN 1 5 2015

Initials: CR

Eastern Research Group

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

Page 6 of 22



Environmental Resources Management, Inc.

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/14/15 14:16

SUBMITTED:

01/07/15 to 01/08/15

AQS SITE

CODE:

Honeywell Hex Chrome Study

Description: Matrix:

Comments:

PAM-2

Start Time 1/5/15 16:27

Lab ID:

Sample Volume:

5010733-05

m³

Sampled: 01/06/15 15:57 Received: 01/07/15 11:23

Analysis Date: 01/13/15 15:38

Hexavalent Chromium by SOP ERG-MOR-063

21.15

Results

MDL

Analyte

CAS Number

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0420

0.0036

JAN 1 5 2015

Initials: CR

Eastern Research Group

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



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

Description:

Comments:

ATTN: Mr. Jeff Boggs

Matrix:

PHONE: (443) 803-8495

PAM-3

FAX: (410) 266-8912

Lab ID:

Sample Volume:

21.12

m³

SUBMITTED:

AQS SITE SITE CODE:

FILE #: 3926.00

REPORTED: 01/14/15 14:16

Honeywell Hex Chrome Study Sampled: 01/06/15 15:47

Received: 01/07/15 11:23 Analysis Date: 01/13/15 15:48

Hexavalent Chromium by SOP ERG-MOR-063

Results

5010733-06

<u>MDL</u>

01/07/15 to 01/08/15

<u>Analyte</u> **CAS Number** Hexavalent Chromium

Start Time 1/5/15 16:19

1854-02-99

ng/m³ Air 0.0402

Flag

ng/m³ Air 0.0036

JAN 1 5 2015

Initials: CR

Eastern Research Group

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

Page 8 of 22



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

01/14/15 14:16

SUBMITTED:

01/07/15 to 01/08/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description: Matrix:

Comments:

PAM-4

Start Time 1/5/15 15:55

Lab ID:

Sample Volume:

5010733-07

21.3 m³ Sampled: 01/06/15 15:35

Received: 01/07/15 11:23 Analysis Date: 01/13/15 15:58

Hexavalent Chromium by SOP ERG-MOR-063

<u>Results</u>

<u>MDL</u>

Analyte

CAS Number

ng/m³ Air

<u>Flag</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0340

0.0036

JAN 1 5 2015

Initials: CR



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Air

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/14/15 14:16

SUBMITTED:

01/07/15 to 01/08/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description: Matrix:

Comments:

PAM-21

Lab ID:

Sample Volume:

5010733-08

21.15

Sampled: 01/06/15 00:00 Received: 01/07/15 11:23

Analysis Date: 01/13/15 16:08

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

<u>Analyte</u>

CAS Number

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

ND

0.0036

JAN 1 5 2015

Initials: CR

Eastern Research Group



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 01/14/15 14:16

Malvern, PA 19355

SUBMITTED:

01/07/15 to 01/08/15

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

FAX: (410) 266-8912

SITE CODE:

Honeywell Hex Chrome Study

Description:

PAM-31

Lab ID:

5010733-09

Hexavalent Chromium by SOP ERG-MOR-063

Sampled: 01/06/15 00:00

Matrix: Air Sample Volume:

21.12 m³

Received: 01/07/15 11:23 Analysis Date: 01/13/15 16:18

Comments:

Results

MDL

Analyte

CAS Number

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

ND

0.0036

JAN 1 5 2015

Initials: CR

Eastern Research Group



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

01/14/15 14:16 REPORTED:

SUBMITTED:

01/07/15 to 01/08/15

AQS SITE

CODE:

Honeywell Hex Chrome Study

Description: Matrix:

Comments:

OAM 1

Start Time 1/6/15 14:45

Lab ID:

Sample Volume:

5010816-01

21.69

m³

Sampled: 01/07/15 14:51 Received: 01/08/15 11:33

Analysis Date: 01/13/15 16:28

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

Analyte

CAS Number

ng/m³ Air

<u>Flaq</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

ND

0.0036

JAN 1 5 2015

Initials: CR



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED:

01/14/15 14:16

Malvern, PA 19355

SUBMITTED:

01/07/15 to 01/08/15

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

FAX: (410) 266-8912

SITE CODE:

Honeywell Hex Chrome Study

Description:

OAM 2

Lab ID:

Sample Volume:

5010816-02

Sampled: 01/07/15 15:10 Received: 01/08/15 11:33

Matrix: Comments:

Start Time 1/6/15 15:11

m³

Analysis Date: 01/13/15 16:38

Hexavalent Chromium by SOP ERG-MOR-063

21.58

Results

MDL

Analyte

CAS Number

ng/m³ Air

<u>Flaq</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

ND

0.0036

JAN 1 5 2015

Initials: CR

Eastern Research Group



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

Description:

Comments:

ATTN: Mr. Jeff Boggs

Matrix:

PHONE: (443) 803-8495

FAX: (410) 266-8912

Col 1 Start Time 1/6/15 16:13

Lab ID: 5010816-03

Sample Volume:

21.78

 $\,m^3$

Flag

FILE #: 3926.00

REPORTED:

SUBMITTED: **AQS SITE**

SITE CODE:

Honeywell Hex Chrome Study

Sampled: 01/07/15 16:25

Received: 01/08/15 11:33 Analysis Date: 01/13/15 14:36

Hexavalent Chromium by SOP ERG-MOR-063

<u>Results</u>

MDL

01/14/15 14:16

01/07/15 to 01/08/15

Analyte Hexavalent Chromium **CAS Number** 1854-02-99

ng/m³ Air 0.0140

ng/m³ Air

0.0036

JAN 1 5 2015

Initials: CR

Eastern Research Group



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

Description:

Comments:

Matrix:

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

PAM-1D

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

FAX: (410) 266-8912

Lab ID:

5010816-04

Sample Volume:

21.78

m³

SUBMITTED:

AQS SITE SITE CODE:

FILE #: 3926.00

REPORTED: 01/14/15 14:16

Honeywell Hex Chrome Study

Sampled: 01/07/15 16:28

Received: 01/08/15 11:33 **Analysis Date:** 01/13/15 14:16

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

01/07/15 to 01/08/15

Analyte

CAS Number

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0134

0.0036

JAN 1 5 2015

Initials: CR



Environmental Resources Management, Inc

FILE#: 3926.00

75 Valley Stream Parkway, Suite 400

01/14/15 14:16 REPORTED:

Malvern, PA 19355

SUBMITTED:

01/07/15 to 01/08/15

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

FAX: (410) 266-8912

SITE CODE:

Honeywell Hex Chrome Study

Description:

PAM-2

Lab ID: 5010816-05

Sampled: 01/07/15 16:08

Matrix:

Sample Volume:

21.72 m³

Received: 01/08/15 11:33 Analysis Date: 01/13/15 16:47

Comments:

Start Time 1/6/15 16:00

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

ng/m³ Air

<u>Flag</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

ND

0.0036

JAN 1 5 2015

Initials: CR

Eastern Research Group

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

Page 16 of 22



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

Description:

Comments:

Matrix:

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

PAM-3

Start Time 1/6/15 15:50

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/14/15 14:16

SUBMITTED:

01/07/15 to 01/08/15

AQS SITE SITE CODE:

Lab ID:

5010816-06

Honeywell Hex Chrome Study

Sample Volume:

m³

Sampled: 01/07/15 15:50 Received: 01/08/15 11:33

Analysis Date: 01/13/15 17:17

Hexavalent Chromium by SOP ERG-MOR-063

21.6

Results

MDL.

<u>Analyte</u>

CAS Number

ng/m³ Air

<u>Flaq</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

ND

0.0036

JAN 1 5 2015

Initials: CR

Eastern Research Group



Environmental Resources Management, Inc.

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Start Time 1/6/15 15:37

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

01/14/15 14:16

SUBMITTED:

01/07/15 to 01/08/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description: Matrix:

Comments:

PAM-4

Lab ID:

Sample Volume:

5010816-07

m³

Sampled: 01/07/15 15:35 Received: 01/08/15 11:33

Analysis Date: 01/13/15 17:27

Hexavalent Chromium by SOP ERG-MOR-063

21.55

Results

MDL

Analyte

CAS Number

ng/m³ Air

<u>Flag</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0190

0.0036

JAN 1 5 2015

Initials: CR

Eastern Research Group



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 01/14/15 14:16

Malvern, PA 19355

SUBMITTED:

01/07/15 to 01/08/15

ATTN: Mr. Jeff Boggs

AQS SITE

ATTIVE WALL COM BOSSE

AQS SI

PHONE: (443) 803-8495

FAX: (410) 266-8912

SITE CODE:

Honeywell Hex Chrome Study

Description: I

PAM-21

Lab ID: 5010816-08

21.72

Sampled: 01/07/15 00:00 Received: 01/08/15 11:33

Matrix: A

Sample Volume:

m³

Comments:

Analysis Date: 01/13/15 17:37

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

<u>Analyte</u>

CAS Number

<u>ng/m³ Air</u>

<u>Flaq</u>

<u>ng/m³ Air</u>

Hexavalent Chromium

1854-02-99

ND

v

0.0036

JAN 1 5 2015

Initials: CR

Eastern Research Group

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

Page 19 of 22



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

Matrix:

Comments:

PHONE: (443) 803-8495

Air

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/14/15 14:16

SUBMITTED:

01/07/15 to 01/08/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

PAM-31

Lab ID:

Sample Volume:

5010816-09

Sampled: 01/07/15 00:00 Received: 01/08/15 11:33

Analysis Date: 01/13/15 17:47

Hexavalent Chromium by SOP ERG-MOR-063

21.6

Results

MDL

Analyte

CAS Number

ng/m³ Air

Flag

<u>ng/m³ Air</u>

Hexavalent Chromium

1854-02-99

ND

0.0036

JAN 1 5 2015

Initials: CR

Eastern Research Group

LABORATORY DATA CONSULTANTS, INC.

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

ERM

January 28, 2015

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

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

Dear Mr. Boggs,

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

LDC Project #33590:

SDG Fraction

5010919/5011314 5012023/5012118 Hexavalent Chromium

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

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

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

Christina Rink

Sincerely,

Project Manager/Chemist

205 pages-SF 1 WEEK TAT Attachment 1 LDC #33590 (ERM - Morrisville, NC / Harbor Point, MD, Hexavalent Chromium Monitoring) Level IV (3) DATE DATE Cr(VI) SDG# LDC REC'D DUE (D7614) 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 | 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 | 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 | 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 | 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 | 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 | 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 | 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 | 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 | 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 | 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 | 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 | 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 | 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 | 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 Matrix: Air/Water/Soil 5010919/5011314 01/27/15 02/03/15 15 0 B 5012023/5012118 01/27/15 02/03/15 18 60 0 0 0 0 0 0 0 0 0 0 0 0 Total T/CR

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

Harbor Point, MD, Hexavalent Chromium Monitoring

Collection Date:

January 8 through January 9, 2014

LDC Report Date:

January 28, 2015

Matrix:

Air

Parameters:

Hexavalent Chromium

Validation Level:

EPA Level IV

Laboratory:

Eastern Research Group

Sample Delivery Group (SDG): 5010919/5011314

Sample Identification

PAM-1(01/08/15)

PAM-1D(01/08/15)

PAM-2(01/08/15)

PAM-3(01/08/15)

PAM-4(01/08/15)

PAM-21(01/08/15)

PAM-31(01/08/15)

OAM 1(01/09/15)

PAM-1(01/09/15)

PAM-1D(01/09/15)

PAM-2(01/09/15)

PAM-3(01/09/15)

PAM-4(01/09/15)

PAM-21(01/09/15)

PAM-31(01/09/15)

PAM-1(01/08/15)DUP

PAM-1D(01/08/15)DUP

PAM-1(01/09/15)DUP

PAM-1D(01/09/15)DUP

Introduction

This data review covers 19 air samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per ASTM D7614 for Hexavalent Chromium.

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

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

The following are definitions of the data qualifiers:

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

I. Technical Holding Times

All technical holding time requirements were met.

II. Initial Calibration

All criteria for the initial calibration were met.

III. Continuing Calibration

Continuing calibration frequency and analysis criteria were met.

IV. Blanks

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

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

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

V. Matrix Spike/Matrix Spike Duplicates

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

VI. Duplicates

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

VII. Laboratory Control Samples

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

VIII. Sample Result Verification

All sample result verifications were acceptable.

IX. Overall Assessment of Data

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

X. Field Duplicates

Samples PAM-1(01/08/15) and PAM-1D(01/08/15) and samples PAM-1(1/09/15) and PAM-1D(1/09/15) were identified as field duplicates. No hexavalent chromium was detected in any of the samples with the following exceptions:

	Concentration (ng/m³)		555			
Analyte	PAM-1(01/08/15)	PAM-1D(01/08/15)	RPD (Limits)	Flags	A or P	
Hexavalent chromium	0.0207	0.0232	11 (≤20)	-	-	

	Concentration (ng/m³)				A or P	
Analyte			RPD (Limits)	Flags		
Hexavalent chromium	0.0358	0.0417	15 (≤20)	-	-	

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

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

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

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

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

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

LDC #: 33590A6

VALIDATION COMPLETENESS WORKSHEET

Level IV

SDG #: 5010919/5011314 Laboratory: Eastern Research Group

Reviewer: 2 2nd Reviewer:

METHOD: (Analyte) Hexavalent Chromium (ASTM D7614)

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

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	01/08-09/15
ll ll	Initial calibration	A	
111.	Calibration verification	A	
IV	Laboratory Blanks	A	
V	Field blanks	ND	FB=(6)(14) TB=(4) JD(7)(15)
VI.	Matrix Spike/Matrix Spike Duplicates	7	Not Required
VII.	Duplicate sample analysis	4	DUP
VIII.	Laboratory control samples	A	Leslo
IX.	Field duplicates	SW	FD= (1,2) (9,10)
X.	Sample result verification	8	
XI	Overall assessment of data	\triangleright	

Note:

A = Acceptable

N = Not provided/applicable

SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate TB = Trip blank

EB = Equipment blank

SB=Source blank OTHER:

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

LDC	#:	33590A6

VALIDATION COMPLETENESS WORKSHEET

Level IV

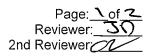
SDG #: 5010919/5011314 Laboratory: Eastern Research Group

Reviewer:_ 2nd Reviewer:_

METHOD: (Analyte) Hexavalent Chromium (ASTM D7614)

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

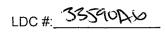
24			
Notes:	_		
	·	 	



Method: Inorganics (EPA Method See Care)

interior annotation (El 71 mother 52000)				
Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	_			
Cooler temperature criteria was met.	/			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	/			
Were the proper number of standards used?	_			
Were all initial calibration correlation coefficients ≥ 0.995?	/			
Were all initial and continuing calibration verification %Rs within the 90 110% QC limits?	/			
Were titrant checks performed as required? (Level IV only)				
Were balance checks performed as required? (Level IV only)			/	
III. Blanks				
Was a method blank associated with every sample in this SDG?	/			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		/		
IV. Matrix spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	/			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.			/	
Were the MS/MSD or duplicate relative percent differences (RPD) \leq 20% for waters and \leq 35% for soil samples? A control limit of \leq CRDL(\leq 2X CRDL for soil) was used for samples that were \leq 5X the CRDL, including when only one of the duplicate sample values were \leq 5X the CRDL.	/			
V. Laboratory control samples				
Was an LCS anaylzed for this SDG?	/			
Was an LCS analyzed per extraction batch?	سـ			
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?				

XIVS



VALIDATION FINDINGS CHECKLIST

Page: 2 of 2 Reviewer: 30 2nd Reviewer: 0

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#<u>33590A6</u>

VALIDATION FINDINGS WORKSHEET

Field Duplicates

Page: _\ of\ Reviewer: _\ 2nd Reviewer: _\

Inorganics: Method See Cover

	Concentrati			
Analyte	1	2	RPD (≤20)	Qual.
Hexavalent Chromium	0.0207	0.0232	11	

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

\\LDCFILESERVER\\Validation\FIELD DUPLICATES\FD_inorganic\33590A6.wpd

LDC #: 33590AU

Validation Findings Worksheet Initial and Continuing Calibration Calculation Verification

Page: <u> </u>	
Reviewer: SS	
2nd Reviewer:	

Method: Inorgai	nics, Method	See Cover	

The correlation coefficient (r) for the calibration of Community was recalculated. Calibration date: (a) \(\frac{14}{14} \)

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

%R = <u>Found X 100</u>

Where,

Found = concentration of each analyte <u>measured</u> in the analysis of the ICV or CCV solution

True = concentration of each analyte in the ICV or CCV source

					Recalculated	Reported	Acceptable
Type of analysis	Analyte	Standard	Conc. (ng/ml)	Area	r or r ²	r or r ²	(Y/N)
Initial calibration		s1	0.05	0.0000134			
		s2	0.1	0.0000339	0.99995	0.99995	
	Cx	s3	0.2	0.0000782			3.1
		s4	0.5	0.0002038			\sim
		s5	1	0.0004016			•
		s6	2	0.00082			
エン ハバイ Calibration verification	Crasp	50003 0.5083mjml	True O. Siglal		101.7%2	101792	
Calibration verification	رح ^م	0.5345 ng/ml			106992	1069%R	J
Calibration verification							

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within	1
10.0% of the recalculated results.	

LDC#: 33590AW

VALIDATION FINDINGS WORKSHEET Level IV Recalculation Worksheet

Page:_	<u>\</u> of _\
Reviewer:	<u> 30</u>
2nd Reviewer:	CZ

METHOD: Inorganics, Method See Coer

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

 $%R = Found \times 100$

Where,

Found =

concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation,

True 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:

 $RPD = |S-D| \times 100$

Where,

S =

Original sample concentration

(S+D)/2

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)
ics 11:44	Laboratory control sample	Crayo	1.13 mg/m	1.00 ng/ml	113%R	113%R	C
2	Matrix spike sample		(SSR-SR)				
DUR 12:44	Duplicate sample	C+**	0.0 ⁻²⁴³ mg/m ³	0.0206 ng/m²	16.5 % RPD	16.4 % 889	Y*

Comments: _*	Roundina					
)				
	-					

LDC #: 33590A6

VALIDATION FINDINGS WORKSHEET

Sample Calculation Verification

Page:_	of	\
Reviewer:	2	
2nd reviewer:	0	1

METHOD: Inorganics, Method	selover
Y N N/A Have results bee Are results within	or all questions answered "N". Not applicable questions are identified as "N/A". In reported and calculated correctly? Ithe calibrated range of the instruments? Ilimits below the CRQL?
Compound (analyte) results for _ recalculated and verified using th	reported with a positive detect were e following equation:
Concentration = $(A-C_0)$ C_1	$Vf = 10 \text{ m/Recalculation:} \left(0.0000252 - (-6.14E-06)\right)$ $W^3 = 21.22$ 0.000424 = 0.07599 mg/m/
A=0.0000252 Co=-6.14 E-06 C1=0.000424	(hg/m1) (0.4) rg/m7 (0.07599 ng/m1) (10 m1) = 0.0358 rg/m3
C120.0004124	143 = 0.0358 rg/m3

#	Sample ID	Analyte	Reported Concentration ('^^ \w^')	Calculated Concentration (الايماسك)	Acceptable (Y/N)
	\	C1-40	70500	0.0200	75 ⁴
	2	1	0.0232	0.0232	7
	3		8410.0	8410.0	
	, F		0.0124	0.0124	
	5		290.0	0.0195	
	6		ND	00	
	7		ND	ND	4
	8		0.000	0.0119	Y*
	9		0.0358	0.0358	3
	10		0.047	0.0416	Y*
			0.0295	0.0295	<u>5</u>
	12		0.0137	0.0138	9*
	13		0.0558	8720.0	2
	41		00	ND	\
	15	<u> </u>	ND	ND	1

Note:	* Pourding		<u>. </u>
		·	



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

Description:

Comments:

ATTN: Mr. Jeff Boggs

Matrix:

PHONE: (443) 803-8495

Air

PAM-1

Col 1 Start Time 1/7/15 16:29

FAX: (410) 266-8912

Sample Volume:

Lab ID:

21.69

FILE #: 3926.00

SUBMITTED:

AQS SITE SITE CODE:

REPORTED: 01/16/15 13:42

Honeywell Hex Chrome Study

Sampled: 01/08/15 16:35

Received: 01/09/15 11:47 Analysis Date: 01/14/15 12:34

Hexavalent Chromium by SOP ERG-MOR-063

5010919-03

Results

MDL

01/09/15 to 01/13/15

<u>Analyte</u> **Hexavalent Chromium** **CAS Number** 1854-02-99

<u>ng/m³ Air</u> 0.0207

Flag

ng/m³ Air

0.0036

JAN 2 8 2015

Initials: CR

Eastern Research Group

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

Page 3 of 19



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED:

01/16/15 13:42

Malvern, PA 19355

SUBMITTED:

01/09/15 to 01/13/15

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

FAX: (410) 266-8912

SITE CODE:

Honeywell Hex Chrome Study

Description:

PAM-1D

Lab ID:

5010919-04

Sampled: 01/08/15 16:39

Matrix:

Air

Sample Volume:

21.72 m³

Received: 01/09/15 11:47 Analysis Date: 01/14/15 12:54

Comments:

Col 2 Start Time 1/7/15 16:31

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0232

0.0036

JAN 2 8 2015

Initials: CR



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

Description:

Comments:

ATTN: Mr. Jeff Boggs

Matrix:

PHONE: (443) 803-8495

PAM-2

Air

Start Time 1/7/15 16:11

FAX: (410) 266-8912

Lab ID:

5010919-05

Sample Volume:

21.63

m³

SUBMITTED:

AQS SITE

SITE CODE:

FILE #: 3926.00

REPORTED: 01/16/15 13:42

Honeywell Hex Chrome Study

Sampled: 01/08/15 16:13 Received: 01/09/15 11:47

Analysis Date: 01/14/15 14:33

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

01/09/15 to 01/13/15

<u>Analyte</u> **Hexavalent Chromium** **CAS Number** 1854-02-99

ng/m³ Air 0.0148

<u>Flaq</u>

ng/m³ Air

0.0036

A SEATON SALES SALES

JAN 2 8 2015

Initials: CR

Eastern Research Group

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Page 5 of 19



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Air

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

01/16/15 13:42

SUBMITTED:

AQS SITE

01/09/15 to 01/13/15

SITE CODE:

Honeywell Hex Chrome Study

Description: Matrix:

Comments:

PAM-3

Start Time 1/7/15 15:56

Lab ID:

5010919-06

Sample Volume:

21.67

m³

Sampled: 01/08/15 16:01

Received: 01/09/15 11:47 Analysis Date: 01/14/15 14:43

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

<u>Analyte</u>

CAS Number

ng/m³ Air

<u>Flag</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0124

0.0036

JAN 28 2015

Initials: CR

Eastern Research Group

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Page 6 of 19



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

Description: Matrix:

Comments:

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

PAM-4

FAX: (410) 266-8912

Air

Start Time 1/7/15 15:37

SUBMITTED:

REPORTED: 01/16/15 13:42

FILE #: 3926.00

01/09/15 to 01/13/15

AQS SITE

CODE:

m³

Honeywell Hex Chrome Study

Sampled: 01/08/15 15:44

Received: 01/09/15 11:47 Analysis Date: 01/14/15 14:53

Hexavalent Chromium by SOP ERG-MOR-063

21.7

5010919-07

Results

MDL

Analyte Hexavalent Chromium **CAS Number** 1854-02-99

Lab ID:

Sample Volume:

ng/m³ Air

0.0195

<u>Flag</u>

ng/m³ Air

0.0036

JAN 2 8 2015

Initials: CR

Eastern Research Group

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Page 7 of 19



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED:

01/16/15 13:42

Malvern, PA 19355

SUBMITTED:

01/09/15 to 01/13/15

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

PAM-21

Lab ID:

5010919-08

Sampled: 01/08/15 00:00

Matrix:

Air

Sample Volume:

21.63

m³

Received: 01/09/15 11:47

Analysis Date: 01/14/15 15:03

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

Analyte Hexavalent Chromium **CAS Number**

FAX: (410) 266-8912

ng/m³ Air

ng/m³ Air

<u>Flag</u> 1854-02-99 ND 0.0036

JAN 2 8 2015

Initials: CR

Eastern Research Group



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED:

01/16/15 13:42

Malvern, PA 19355

SUBMITTED:

01/09/15 to 01/13/15

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

FAX: (410) 266-8912

SUPECODE:

Honeywell Hex Chrome Study

Description:

PAM-31

Lab ID:

5010919-09

Sampled: 01/08/15 00:00

Matrix: Air Sample Volume:

m³

Received: 01/09/15 11:47

Comments:

Analysis Date: 01/14/15 15:13

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

ND

0.0036

JAN 28 2015

Initials: CR

Eastern Research Group

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

Page 9 of 19



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

Matrix:

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/16/15 13:42

01/09/15 to 01/13/15

SUBMITTED:

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

OAM 1

Air

Lab ID:

Sample Volume:

5011314-01

m³

Sampled: 01/09/15 14:28 Received: 01/13/15 11:05

Analysis Date: 01/14/15 16:42

Comments: Start Time 1/8/15 14:54

Hexavalent Chromium by SOP ERG-MOR-063

21.21

Results

MDL

Analyte

CAS Number

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0120

0.0036

JAN 2 8 2015

Initials: CR

Eastern Research Group

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

Page 10 of 19



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

803-8495 **FAX:** (410) 266-8912

FILE #: 3926.00

REPORTED: 01/16/15 13:42

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

AQS SITE

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

Matrix:

PAM-1

Air

Lab ID:

Sample Volume:

5011314-03

21.22 m³

Sampled: 01/09/15 16:13

Received: 01/13/15 11:05 **Analysis Date:** 01/14/15 16:53

Comments:

Col 1 Start Time 1/8/15 16:38

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

<u>Analyte</u>

CAS Number

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0358

0.0036

JAN 2 8 2015

Initials: CR

Eastern Research Group



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Col 2 Start Time 1/8/15 16:43

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

01/16/15 13:42

SUBMITTED:

AQS SITE

m³

SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

Matrix:

PAM-1D

Air

Lab ID:

Sample Volume:

5011314-04

21.22

Sampled: 01/09/15 16:18

01/09/15 to 01/13/15

Received: 01/13/15 11:05 Analysis Date: 01/14/15 17:13

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

ng/m³ Air

<u>Flaq</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0417

0.0036

JAN 28 2015



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

01/16/15 13:42

SUBMITTED:

01/09/15 to 01/13/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

PAM-2

Air

Lab ID:

Sample Volume:

5011314-05

m³

Sampled: 01/09/15 15:53 Received: 01/13/15 11:05

Analysis Date: 01/14/15 15:33

Matrix: Comments:

Start Time 1/8/15 16:16

Hexavalent Chromium by SOP ERG-MOR-063

21.25

Results

<u>MDL</u>

Analyte

CAS Number

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0295

0.0036

JAN 28 2015

Initials: CR

Eastern Research Group

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Page 13 of 19



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

01/16/15 13:42

01/09/15 to 01/13/15

SUBMITTED:

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

PAM-3

Air

Lab ID:

Sample Volume:

5011314-06

21.19 m³ Sampled: 01/09/15 15:37

Received: 01/13/15 11:05

Analysis Date: 01/14/15 15:43

Comments:

Matrix:

Start Time 1/8/15 16:04

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL.

Analyte

CAS Number

ng/m³ Air

<u>Flag</u>

<u>ng/m³ Air</u>

Hexavalent Chromium

1854-02-99

0.0137

0.0036

JAN 2 8 2015

Initials: CR

Eastern Research Group

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Page 14 of 19



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Air

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

01/16/15 13:42

SUBMITTED:

01/09/15 to 01/13/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

PAM-4

Lab ID:

Sample Volume:

5011314-07

21.15 m³ Sampled: 01/09/15 15:18

Received: 01/13/15 11:05 Analysis Date: 01/14/15 15:53

Matrix: Comments:

Start Time 1/8/15 15:48

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

Analyte

CAS Number

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0558

0.0036

JAN 2 8 2015

Initials: CR

Eastern Research Group

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Page 15 of 19



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

Matrix:

PHONE: (443) 803-8495

Air

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/16/15 13:42

01/09/15 to 01/13/15

SUBMITTED:

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

PAM-21

Lab ID:

5011314-08

Sample Volume:

21.25

m³

Sampled: 01/09/15 00:00 Received: 01/13/15 11:05

Analysis Date: 01/14/15 16:03

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL.

Analyte Hexavalent Chromium **CAS Number** 1854-02-99

<u>ng/m³ Air</u> ND

<u>Flaq</u>

ng/m³ Air 0.0036

JAN 2 8 2015

Initials: CR

Eastern Research Group

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Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 01/16/15 13:42

SUBMITTED:

01/09/15 to 01/13/15

Malvern, PA 19355

AQS SITE

ATTN: Mr. Jeff Boggs

SITE CODE:

PHONE: (443) 803-8495 FAX: (410) 266-8912 Honeywell Hex Chrome Study

Description:

Comments:

PAM-31

Lab ID:

5011314-09

Sampled: 01/09/15 00:00

Matrix:

Air

Sample Volume:

Received: 01/13/15 11:05

Analysis Date: 01/14/15 16:32

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte Hexavalent Chromium **CAS Number** 1854-02-99

ng/m³ Air ND

Flag

ng/m³ Air 0.0036

JAN 2 8 2015

Initials: CR

Eastern Research Group

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Page 17 of 19

Laboratory Data Consultants, Inc. Data Validation Report

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

Collection Date: January 19 through January 20, 2015

LDC Report Date: January 28, 2015

Matrix: Air

Parameters: Hexavalent Chromium

Validation Level: EPA Level IV

Laboratory: Eastern Research Group

Sample Delivery Group (SDG): 5012023/5012118

Sample Identification

OAM 1(1/19/15) PAM-1(1/20/15)DUP OAM 2(1/19/15) PAM-1D (1/20/15)DUP

PAM-1(1/19/15) PAM-1D (1/19/15) PAM-2(1/19/15)

PAM-3(1/19/15)

PAM-4(1/19/15)

PAM-21(1/19/15)

PAM-31(1/19/15)

OAM 1(1/20/15)

OAM 2(1/20/15)

PAM-1(1/20/15)

PAM-1D (1/20/15)

PAM-2(1/20/15) PAM-3(1/20/15)

PAM-4(1/20/15)

PAM-21(1/20/15)

PAM-31(1/20/15)

PAM-1(1/19/15)DUP

PAM-1D (1/19/15)DUP

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

Introduction

This data review covers 22 air samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per ASTM D7614 for Hexavalent Chromium.

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

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

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- NJ Presumptive evidence of presence of the compound at an estimated quantity.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

II. Initial Calibration

All criteria for the initial calibration were met.

III. Continuing Calibration

Continuing calibration frequency and analysis criteria were met.

IV. Blanks

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

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

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

V. Matrix Spike/Matrix Spike Duplicates

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

VI. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

VII. Laboratory Control Samples

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

VIII. Sample Result Verification

All sample result verifications were acceptable.

IX. Overall Assessment of Data

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

X. Field Duplicates

Samples PAM-1(1/19/15) and PAM-1D (1/19/15) and samples PAM-1(1/20/15) and PAM-1D (1/20/15) were identified as field duplicates. No hexavalent chromium was detected in any of the samples with the following exceptions:

	Concentrat	ion (ng/m³)			
Analyte	PAM-1(1/19/15)	PAM-1D (1/19/15)	RPD (Limits)	Flags	A or P
Hexavalent chromium	0.0308	0.0254	19 (≤20)	-	-

	Concentrat	ion (ng/m³)			
Analyte	PAM-1(1/20/15)	PAM-1D (1/20/15)	RPD (Limits)	Flags	A or P
Hexavalent chromium	0.115	0.101	13 (≤20)	<u>-</u>	-

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

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

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

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

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

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

VALIDATION COMPLETENESS WORKSHEET

SDG #: 5012023/5012118 Laboratory: Eastern Research Group

LDC #: 33590B6

Level IV

Page: _of _ Reviewer: 30 2nd Reviewer:

Date: 1/27/15

METHOD: (Analyte) Hexavalent Chromium (ASTM D7614)

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

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	1/19-20/19
li li	Initial calibration	A	
111.	Calibration verification	A	
IV_	Laboratory Blanks	A	
V	Field blanks	ND	FB=(8)(17) TB=(9)(18)
VI.	Matrix Spike/Matrix Spike Duplicates	N	Not Required
VII.	Duplicate sample analysis	A	DUR
VIII.	Laboratory control samples	A	LISTO
IX.	Field duplicates	SW	FD=(3.4) (12.13)
X	Sample result verification	A	, , ,
xı	Overall assessment of data	A	

Note:

A = Acceptable

N = Not provided/applicable SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank OTHER:

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

LDC	#:	33590B6

SDG #: 5012023/5012118

Laboratory: Eastern Research Group

VALIDATION COMPLETENESS WORKSHEET

Level IV

Reviewer: 2nd Reviewer:

METHOD: (Analyte) Hexavalent Chromium (ASTM D7614)

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

LDC#: 3359086

VALIDATION FINDINGS CHECKLIST

Page: \lof \frac{2}{2}
Reviewer: \frac{2}{2}

Method:Inorganics (EPA Method See Love)

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 99 -110 % QC limits?	/			
Were titrant checks performed as required? (Level IV only)			/	
Were balance checks performed as required? (Level IV only)				
III. Blanks				
Was a method blank associated with every sample in this SDG?				
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		_	!	
IV. Matrix spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.				
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	Ð		/	
Were the MS/MSD or duplicate relative percent differences (RPD) \leq 20% for waters and \leq 35% for soil samples? A control limit of \leq CRDL(\leq 2X CRDL for soil) was used for samples that were \leq 5X the CRDL, including when only one of the duplicate sample values were \leq 5X the CRDL.	/			
V. Laboratory control samples				
Was an LCS 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?			1	



VALIDATION FINDINGS CHECKLIST

Page: Zof Z Reviewer: 3:0 2nd Reviewer: 7

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

LDC# 33590B6

VALIDATION FINDINGS WORKSHEET

Field Duplicates

Page: _	\ o <u>f \</u>
Reviewer:	<u> </u>
2nd Reviewer:_	α

Inorganics: Method See Cover

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

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

 $\verb|\LDCFILESERVER|\Validation|\FIELD DUPLICATES|\FD_inorganic|\33590B6.wpd|$

LDC #: 35590840

Validation Findings Worksheet Initial and Continuing Calibration Calculation Verification

Page:\	of_
Reviewer:	<u> </u>
nd Reviewe	er: 🔍

Method: Inorganics, Method _	See Cover
------------------------------	-----------

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

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

%R = Found X 100

Where,

Found = concentration of each analyte <u>measured</u> in the analysis of the ICV or CCV solution

True = concentration of each analyte in the ICV or CCV source

		<u> </u>			Recalculated	Reported	Acceptable
Type of analysis	Analyte	Standard	Conc. (ng/ml)	Area	r or r ²	r or r ²	(Y/N)
Initial calibration		s1	0.05	0.0000135			
		s2	0.1	0.0000317	0.99999	0.99999	
		s3	0.2	0.0000763			L U
	(- 44	s4	0.5	0.0002078			
		s5	1	0.0004309			i
		s6	2	0.0008726			
スピー ハウシベミ Calibration verification	Cx22	Eound 0.5246 ng/ml	True 0.5 nalm		[049%R	104.9%2	
CCン ハンベベ Calibration verification	CKZX	0.5291 ng/ml			1058%.4	10787.7	1
Calibration verification							

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

LDC#: 33590810

VALIDATION FINDINGS WORKSHEET Level IV Recalculation Worksheet

Page: __of __ Reviewer: _____ 2nd Reviewer: ______

METHOD: Inorganics,	Method	See !	Corser

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

 $%R = Found \times 100$ True

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:

 $RPD = [S-D] \times 100$

Where,

S =

Original sample concentration

(S+D)/2

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 11'115	Laboratory control sample	Cxxx	1.10 ng/ml	1.00 mg/m/	110%.8	110%R	5
N	Matrix spike sample		(SSR-SR)	·			
DUQ 12:14	Duplicate sample	Cxxx	0.0299ng/m³	0.030 ng/m3	3.29%,870	3.09%	YX.

Comments: _	* Rouding		 	 	 		
)					

LDC #: 33590PHO

VALIDATION FINDINGS WORKSHEET

Sample Calculation Verification

Page: _of _
Reviewer: _\colon _
2nd reviewer: _\colon _

METHOD: Inorganics, Method See Cover	
Please see qualifications below for all questions answered "N". Not applicable quency 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?	estions are identified as "N/A".
Compound (analyte) results for	reported with a positive detect were
Concentration = $(A - C_0)(C_1)$ Recalculation: $(0.000852 - 0.00$	(-1.14 E-05)) = 0.2/86 mg/ml
(1=0.0000852 (hghi)(h) (0.286 mghi) (10 (1=0.0000852 (hghi)(h) (2)	0ml) = 0.101 mg/m3

<u></u>	= 0.000 dale		21.3 (W		<u> </u>
. #	Sample ID	Analyte	Reported Concentration (va\w')	Calculated Concentration (va (v ³)	Acceptable (Y/N)
	\	Cxx	0.0252	0.0252	7
	2		NO	<i>PO</i>	4
	3		0.0308	0.0309	27*
	P		0.0254	0.0255	3*
	S		0.0215	0.0210	Y*
	6		NO	ND	4
	7		0.0568	0.0568	
	8		NO	<i>QQ</i>	
	٩		NO	NO	
	ю		(0.066)	0.0661	
	11		0.0623	0.0623	
	12		0.115	0.115	
	13		101.0	10.0	
	14		0.105	0.105	<u>U</u>
	15		0.0909	0.0900	7*
	ط۱		0.0978	0.0978	7
	17		NO	しる。	
	18		NO	NO	4_

Note:	* Rondong		 	 :	



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

Description:

Comments:

ATTN: Mr. Jeff Boggs

Matrix:

PHONE: (443) 803-8495

FAX: (410) 266-8912

Air

OAM 1

Start Time 1/18/15 14:58

FILE #: 3926.00

REPORTED:

01/27/15 10:12

01/20/15 to 01/21/15

SUBMITTED: AQS SITE

SITE CODE:

m³

Honeywell Hex Chrome Study

Sampled: 01/19/15 14:44

Received: 01/20/15 11:32

Analysis Date: 01/22/15 13:26

Hexavalent Chromium by SOP ERG-MOR-063

21.39

5012023-10

Results

MDL

Analyte Hexavalent Chromium **CAS Number**

Lab ID:

Sample Volume:

ng/m³ Air

Flag

<u>ng/m³ Air</u>

1854-02-99

0.0252

0.0036

JAN 2 8 2015



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Description:

Comments:

ATTN: Mr. Jeff Boggs

Matrix:

PHONE: (443) 803-8495

FAX: (410) 266-8912

OAM 2 Air

Start Time 1/18/15 15:21

FILE #: 3926.00

REPORTED:

01/27/15 10:12

01/20/15 to 01/21/15

SUBMITTED:

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Sampled: 01/19/15 15:08

Received: 01/20/15 11:32

Analysis Date: 01/22/15 13:36

Hexavalent Chromium by SOP ERG-MOR-063

5012023-11

Results

<u>MDL</u>

<u>Analyte</u> Hexavalent Chromium

CAS Number 1854-02-99

ng/m³ Air ND

Lab ID:

Sample Volume:

21.39

Flag

ng/m³ Air 0.0036

JAN 2 8 2015



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Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

Col 1 Start Time 1/18/15 16:21

FILE #: 3926.00

REPORTED:

01/27/15 10:12

01/20/15 to 01/21/15

SUBMITTED:

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

Matrix:

PAM-1

Lab ID:

5012023-12

21.34

Sampled: 01/19/15 16:04 Received: 01/20/15 11:32

Sample Volume:

m³

Analysis Date: 01/22/15 12:06

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

ng/m³ Air

<u>Flag</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0308

0.0036

JAN 2 8 2015

Initials: CR

Eastern Research Group

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ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Air

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/27/15 10:12

01/20/15 to 01/21/15

SUBMITTED: AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

PAM-1D

Lab ID:

Sample Volume:

5012023-13

m³

Sampled: 01/19/15 16:07 Received: 01/20/15 11:32

Analysis Date: 01/22/15 12:26

Matrix: Comments:

Col 2 Start Time 1/18/15 16:25

Hexavalent Chromium by SOP ERG-MOR-063

21.34

Results

<u>MDL</u>

Analyte

CAS Number

ng/m³ Air

<u>Flag</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0254

0.0036

JAN 28 2015



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

01/27/15 10:12

SUBMITTED:

01/20/15 to 01/21/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

Matrix:

PAM-2

Air

Lab ID:

Sample Volume:

5012023-14

m³

Sampled: 01/19/15 15:53

Received: 01/20/15 11:32

Analysis Date: 01/22/15 14:05

Start Time 1/18/15 16:00

Hexavalent Chromium by SOP ERG-MOR-063

21.62

Results

MDL

Analyte

CAS Number

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0215

0.0036

JAN 2 8 2015



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Air

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

01/27/15 10:12 01/20/15 to 01/21/15

SUBMITTED: AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

Matrix:

PAM-3

Lab ID:

5012023-15

21.38

Sampled: 01/19/15 15:35

Sample Volume:

Received: 01/20/15 11:32 Analysis Date: 01/22/15 14:15

Comments:

Start Time 1/18/15 15:50

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte Hexavalent Chromium

CAS Number 1854-02-99

ng/m³ Air ND

<u>Flag</u>

ng/m³ Air 0.0036

JAN 28 2015



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Air

Start Time 1/18/15 15:40

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

01/27/15 10:12

01/20/15 to 01/21/15

SUBMITTED:

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

Matrix:

PAM-4

Lab ID:

5012023-16

Sample Volume:

21.39

m³

Sampled: 01/19/15 15:26 Received: 01/20/15 11:32

Analysis Date: 01/22/15 14:25

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

ng/m³ Air

<u>Flaq</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0568

0.0036

JAN 2 8 2015



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

01/27/15 10:12 REPORTED:

Malvern, PA 19355

SUBMITTED:

01/20/15 to 01/21/15

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

SITE CODE:

Honeywell Hex Chrome Study

Description:

PAM-21

FAX: (410) 266-8912

5012023-17 Lab ID:

Sampled: 01/19/15 00:00

Matrix:

Air

Sample Volume:

21.62 m³

Received: 01/20/15 11:32 Analysis Date: 01/22/15 14:35

Comments:

Results

Hexavalent Chromium by SOP ERG-MOR-063

MDL.

Analyte Hexavalent Chromium CAS Number 1854-02-99

ng/m3 Air ND

Flag

ng/m³ Air 0.0036

Initials: CR

JAN 2 8 2015

Eastern Research Group

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



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/27/15 10:12

01/20/15 to 01/21/15

SUBMITTED: AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

PAM-31

Lab ID:

5012023-18

21.38

Sampled: 01/19/15 00:00 Received: 01/20/15 11:32

Matrix: Air Comments:

Sample Volume:

m³

Analysis Date: 01/22/15 14:45

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

<u>Analyte</u> Hexavalent Chromium **CAS Number** 1854-02-99

ng/m³ Air ND

Flag

ng/m³ Air 0.0036

JAN 2 8 2015

Initials: CR

Eastern Research Group

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



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

Description:

Comments:

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Matrix:

FAX: (410) 266-8912

OAM 1

Start Time 1/19/15 14:47

FILE #: 3926.00

REPORTED: SUBMITTED: 01/27/15 10:12

01/20/15 to 01/21/15

AQS SITE

SODE:

m³

Honeywell Hex Chrome Study

Sampled: 01/20/15 14:57

Received: 01/21/15 10:46

Analysis Date: 01/22/15 14:55

Hexavalent Chromium by SOP ERG-MOR-063

21.75

5012118-01

Results

MDL

CAS Number

Lab ID:

Sample Volume:

ng/m³ Air

<u>Flaq</u>

<u>ng/m³ Air</u>

Hexavalent Chromium

Analyte

1854-02-99

0.0661

0.0036

JAN 2 8 2015



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Air

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

01/27/15 10:12

01/20/15 to 01/21/15

SUBMITTED:

AQS SITE SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

Matrix:

OAM 2

Start Time 1/19/15 15:10

Lab ID:

Sample Volume:

5012118-02

21.78 m³ Sampled: 01/20/15 15:22 Received: 01/21/15 10:46

Analysis Date: 01/22/15 15:05

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

<u>Analyte</u>

CAS Number

ng/m³ Air

<u>Flag</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0623

0.0036

JAN 2 8 2015



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

Description:

Comments:

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Matrix:

Air

PAM-1

Col 1 Start Time 1/19/15 16:07

FAX: (410) 266-8912

Lab ID:

Sample Volume:

5012118-03

21.58

m³

FILE #: 3926.00

REPORTED:

SUBMITTED:

AQS SITE SITE CODE:

Honeywell Hex Chrome Study

Sampled: 01/20/15 16:06

Received: 01/21/15 10:46 Analysis Date: 01/22/15 12:45

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

01/27/15 10:12

01/20/15 to 01/21/15

Analyte Hexavalent Chromium **CAS Number** 1854-02-99

ng/m³ Air 0.115

<u>Flag</u>

ng/m³ Air

0.0036

JAN 2 8 2015



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/27/15 10:12

SUBMITTED:

01/20/15 to 01/21/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

Matrix:

PAM-1D

Lab ID:

Sample Volume:

5012118-04

m³

Sampled: 01/20/15 16:09

Received: 01/21/15 10:46 Analysis Date: 01/22/15 13:05

Comments:

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

Hexavalent Chromium by SOP ERG-MOR-063

21.59

<u>Results</u>

<u>MDL</u>

<u>Analyte</u>

CAS Number

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.101

0.0036

JAN 2 8 2015



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

01/27/15 10:12

SUBMITTED:

01/20/15 to 01/21/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

Matrix:

PAM-2

Lab ID:

5012118-05

m³

Sampled: 01/20/15 15:56 Received: 01/21/15 10:46

21.6

Analysis Date: 01/22/15 15:15

Air Comments: Start Time 1/19/15 15:56

Hexavalent Chromium by SOP ERG-MOR-063

Sample Volume:

Results

MDL

Analyte

CAS Number

ng/m³ Air

<u>Flag</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.105

0.0036

JAN 2 8 2015



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

Description:

Comments:

ATTN: Mr. Jeff Boggs

Matrix:

PHONE: (443) 803-8495

PAM-3

Air

Start Time 1/19/15 15:38

FAX: (410) 266-8912

Lab ID:

Sample Volume:

5012118-06

21.76

m³

FILE #: 3926.00

REPORTED:

SUBMITTED:

AQS SITE SITE CODE:

Honeywell Hex Chrome Study

Sampled: 01/20/15 15:49

Received: 01/21/15 10:46

Analysis Date: 01/22/15 15:25

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

01/27/15 10:12

01/20/15 to 01/21/15

Analyte Hexavalent Chromium **CAS Number** 1854-02-99

ng/m³ Air 0.0909

<u>Flag</u>

ng/m³ Air

0.0036

JAN 2 8 2015



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Air

Start Time 1/19/15 15:29

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/27/15 10:12 SUBMITTED:

01/20/15 to 01/21/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

Matrix:

PAM-4

Lab ID:

Sample Volume:

5012118-07

21.83

 m^3

Sampled: 01/20/15 15:44 Received: 01/21/15 10:46

Analysis Date: 01/22/15 15:35

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

<u>ng/m³ Air</u>

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0978

0.0036

JAN 2 8 2015



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Matrix:

Comments:

Description: PAM-21

Air

FAX: (410) 266-8912

Lab ID:

Sample Volume:

5012118-08

21.6

m³

SUBMITTED:

AQS SITE SITE CODE:

FILE #: 3926.00

REPORTED: 01/27/15 10:12

Honeywell Hex Chrome Study

Sampled: 01/20/15 00:00

Received: 01/21/15 10:46 Analysis Date: 01/22/15 16:04

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

01/20/15 to 01/21/15

Analyte Hexavalent Chromium **CAS Number** 1854-02-99

ng/m³ Air ND

<u>Flag</u>

ng/m³ Air 0.0036

JAN 2 8 2015

Initials: CR

Eastern Research Group

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



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/27/15 10:12

01/20/15 to 01/21/15

SUBMITTED:

AQS SITE

SHECODE:

Honeywell Hex Chrome Study

Description:

Comments:

PAM-31

Lab ID:

5012118-09

21.76

Sampled: 01/20/15 00:00

Matrix:

Air

Sample Volume:

m³

Received: 01/21/15 10:46

Analysis Date: 01/22/15 16:14

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

Analyte Hexavalent Chromium **CAS Number** 1854-02-99

ng/m³ Air ND

<u>Flag</u>

ng/m³ Air 0.0036

JAN 2 8 2015

Initials: CR



LABORATORY DATA CONSULTANTS, INC.

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

ERM January 22, 2015

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

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

Dear Mr. Boggs,

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

LDC Project #33533:

SDG Fraction

5011314 Hexavalent Chromium

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

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

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

A ---

Sincerely,

Christina Rink
Project Manager/Chemist

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Laboratory Data Consultants, Inc. Data Validation Report

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

Collection Date: January 10 through January 12, 2015

LDC Report Date: January 21, 2015

Matrix: Air

Parameters: Hexavalent Chromium

Validation Level: EPA Level IV

Laboratory: Eastern Research Group

Sample Delivery Group (SDG): 5011314

Sample Identification

OAM 1(01/10/15)

OAM 2(01/10/15)

PAM-1(01/10/15)

PAM-1D(01/10/15)

PAM-2(01/10/15)

PAM-3(01/10/15)

PAM-4(01/10/15)

PAM-21(01/10/15)

PAM-31(01/10/15)

OAM 2(01/12/15)

PAM-1(01/12/15)

PAM-1D(01/12/15)

PAM-3(01/12/15)

PAM-4(01/12/15)

PAM-21(01/12/15)

PAM-31(01/12/15)

PAM-1(01/10/15)DUP

PAM-1D(01/10/15)DUP

PAM-1(01/12/15)DUP

PAM-1D(01/12/15)DUP

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

Introduction

This data review covers 20 air samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per ASTM D7614 for Hexavalent Chromium.

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

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

The following are definitions of the data qualifiers:

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

I. Technical Holding Times

All technical holding time requirements were met.

II. Initial Calibration

All criteria for the initial calibration were met.

III. Continuing Calibration

Continuing calibration frequency and analysis criteria were met.

IV. Blanks

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

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

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

V. Matrix Spike/Matrix Spike Duplicates

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

VI. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

VII. Laboratory Control Samples

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

VIII. Sample Result Verification

All sample result verifications were acceptable.

IX. Overall Assessment of Data

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

X. Field Duplicates

Samples PAM-1(01/10/15) and PAM-1D(01/10/15) and samples PAM-1(01/12/15) and PAM-1D(01/12/15) were identified as field duplicates. No hexavalent chromium was detected in any of the samples with the following exceptions:

	Concentrat	ion (ng/m³)		2.116.21	
Analyte	PAM-1 (01/10/15)	PAM-1D (01/10/15)	RPD (Limits)	Flags	A or P
Hexavalent chromium	0.0214	0.0225	5 (≤20)	-	-

	Concentrat	ion (ng/m³)			
Analyte	PAM-1 (01/12/15)	PAM-1D (01/12/15)	RPD (Limits)	Flags	A or P
Hexavalent chromium	0.0980	0.0842	15 (≤20)	-	-

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

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

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

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

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

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

LDC #: 33533A6

VALIDATION COMPLETENESS WORKSHEET

Level IV

SDG #: 5011314 Laboratory: Eastern Research Group

METHOD: (Analyte) Hexavalent Chromium (ASTM D7614)

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

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	1/10-12/15
li	Initial calibration	A	
111.	Calibration verification	A	
IV	Laboratory Blanks	A	
V	Field blanks	SU	FB=(8)(15) TB=(9)(16)
VI.	Matrix Spike/Matrix Spike Duplicates	N	Not Require
VII.	Duplicate sample analysis	A	Dib ,
VIII.	Laboratory control samples	A	Leslo
IX.	Field duplicates	SW	FD=(3.4) (11,12)
X.	Sample result verification	A	, , ,
XI	Overall assessment of data		

Note:

A = Acceptable

N = Not provided/applicable SW = See worksheet ND = No compounds detected

R = Rinsate FB = Field blank D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank OTHER:

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

LDC #: 33533A6 SDG #: 5011314

VALIDATION COMPLETENESS WORKSHEET

Level IV

Laboratory: Eastern Research Group

Page: 2 of 2 Reviewer: 50 2nd Reviewer: 6

METHOD: (Analyte) Hexavalent Chromium (ASTM D7614)

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

VALIDATION FINDINGS CHECKLIST

Page: _of _
Reviewer: ___
2nd Reviewer: ___

Method: Inorganics (EPA Method See Care)

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

WETC-EPA_2010.wpd version 1.0



VALIDATION FINDINGS CHECKLIST

Page: __of __ Reviewer: ____ 2nd Reviewer: ____

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

LDC#___33533A6_

VALIDATION FINDINGS WORKSHEET

Field Duplicates

Page: .	<u> </u>
Reviewer:	<i>D</i> 2
2nd Reviewer:	a

Inorganics: Method See Cover

	Concentrati			
Analyte	3	4	RPD (≤20)	Qual.
Hexavalent Chromium	0.0214	0.0225	5	

	Concentrati			
Analyte	11	12	RPD (≤20)	Qual.
Hexavalent Chromium	0.0980	0.0842	15	·

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

LDC #: 33533Ab

Validation Findings Worksheet Initial and Continuing Calibration Calculation Verification

Page:_ of\
Reviewer: 30
2nd Reviewer: 2

Method: Inorganics, Method	See Cover
-----------------------------------	-----------

The correlation coefficient (r) for the calibration of was recalculated. Calibration date: Oi \(\sigma \)

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

%R = <u>Found X 100</u>

Where,

Found = concentration of each analyte measured in the analysis of the ICV or CCV solution

True

True = concentration of each analyte in the ICV or CCV source

					Recalculated	Reported	Acceptable
Type of analysis	Analyte	Standard	Conc. (ng/ml)	Area	r or r ²	r or r ²	(Y/N)
Initial calibration		s1	0.05	0.0000142			
		s2	0.1	0.0000353	0.99952	0.99952	
	طعي	s3	0.2	0.0000776			٩
		s4	0.5	0.0002054			
		s5	1	0.000397			
		s6	2	0.0008528			
11:22	Cxx4	Found	True				1.00
Calibration verification	<u>ک</u>	0.5203 mg/m	10.5 nglml		104.18,2	104.0% R	J*
w 12:23	Cx)	7			1.1.00	6.1
Calibration verification		0.5074ndw	0.5 mg/ml		101.5 %	101.5%R	
Calibration verification							

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



LDC#: 33533A4

VALIDATION FINDINGS WORKSHEET Level IV Recalculation Worksheet

	Page:_	<u>\</u> of_	<u> </u>
	Reviewer:_	35	$\overline{\Omega}$
2nd	Reviewer:	9	
	_		_

METHOD: Inorganics,	Method	<u>S</u> ee	Cover	

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:

 $RPD = |S-D| \times 100$

Where,

S =

Original sample concentration

(S+D)/2

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)
LC5 11:53	Laboratory control sample	رب ^ی ه	1.027 nglml	1.00mg/m)			7)
	Matrix spike sample		(SSR-SR)				
DV8	Duplicate sample	ملحك	0.025bng/m³	0.0214 ng/m3	17.9 % RRD	17,98890	3)

Comments:	 		

LDC #: 33533A6

VALIDATION FINDINGS WORKSHEET

Sample Calculation Verification

Page:_	<u></u> of _ \
Reviewer:	20
2nd reviewer:	Ca

	METHOD: Inorganics, Method See Cover	
ĺ	Please see qualifications below for all questions answered "N". N Y N N/A	ctly?
	Compound (analyte) results for	reported with a positive detect were
	Concentration = $(A - Co)(C_1)$ Recalculation: (O)	0.0004271 = 0.289 ng/m)
	A=0.0000019 W3=218 -	0.0004271 = 0.288 nalm)
	$C_0 = -1.04 = 05$ (ng/m1)(04) = ng/m ³ = ng/m ³	(0.082 mg/m)/(0m1) = 0.0132 mg/m3
		Reported Calculated

#	Sample ID	Analyte	Reported Concentration	Calculated Concentration (va (3)	Acceptable (Y/N)
	ì	Crabo	Qu	25	3
	2		ND	ND	P
	3		0.0214	0.0214	4
	Ц		0.0225	0.0726	42
	2		0.0132	0.0132	3)
	6		NO	ND	
	7		0.0322	0.0322	
	8		NO	る	
	٩		NO	ND	
	10		0.261	0.261	<u> </u>
			0.0980	0.0980	C
	12		0.0842	0.0843	<u>4</u> ×
	13		0280.0	0.0850	7
	14		0.0792	0.0793	グ *
	15		ND	とめ	7
<u> </u>	ا ا	, J	20	ND	4
	/				
					-

Note:	*Rounding			
)		



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 01/20/15 15:16

SUBMITTED:

01/13/15

Malvern, PA 19355 ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

OAM 1

Start Time 1/9/15 14:32

Lab ID: 5011314-10

Sampled: 01/10/15 14:43

Matrix:

Air

Sample Volume:

21.76 m³ Received: 01/13/15 11:05

Analysis Date: 01/15/15 14:04

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

ng/m³ Air

<u>Flag</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

FAX: (410) 266-8912

ND

0.0036

JAN 2 2 2015

en a francisco supplicable

Initials: CR

Eastern Research Group

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Page 3 of 20



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Air

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/20/15 15:16

01/13/15

SUBMITTED: **AQS SITE**

SITE CODE:

Honeywell Hex Chrome Study

Description: Matrix:

OAM 2

Lab ID:

Sample Volume:

5011314-11

21.72 m³

Sampled: 01/10/15 15:05 Received: 01/13/15 11:05 Analysis Date: 01/15/15 14:14

Comments:

Start Time 1/9/15 14:58

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

Analyte

CAS Number

ng/m³ Air

<u>Flaq</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

ND

0.0036

JAN 2 2 2015

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Page 4 of 20



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

Description:

Comments:

ATTN: Mr. Jeff Boggs

Matrix:

PHONE: (443) 803-8495

PAM-1

FAX: (410) 266-8912

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

Lab ID: 5011314-12

Sample Volume:

21.88

m³

Sampled: 01/10/15 16:37 Received: 01/13/15 11:05

Analysis Date: 01/15/15 12:43

Honeywell Hex Chrome Study

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

01/20/15 15:16

01/13/15

Analyte Hexavalent Chromium **CAS Number** 1854-02-99

ng/m³ Air

<u>Flaq</u>

FILE #: 3926.00 REPORTED:

SUBMITTED:

AQS SITE SITE CODE:

> ng/m³ Air 0.0036

0.0214

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FILE #: 3926.00

REPORTED: 01/20/15 15:16

SUBMITTED: 01/13/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description: Matrix:

PAM-1D

Lab ID:

Sample Volume:

5011314-13

m³

Sampled: 01/10/15 16:39

Received: 01/13/15 11:05 Analysis Date: 01/15/15 13:03

Comments: Col 2 Start Time 1/9/15 16:22

Δir

Hexavalent Chromium by SOP ERG-MOR-063

21.86

Results

MDL

Analyte

CAS Number

ng/m³ Air

<u>Flaq</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0225

0.0036

JAN 2 2 2015

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Page 6 of 20



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

Description:

Comments:

ATTN: Mr. Jeff Boggs

Matrix:

PHONE: (443) 803-8495 PAM-2

Air

Start Time 1/9/15 15:57

FAX: (410) 266-8912

Lab ID:

5011314-14

Sample Volume:

21.8

m³

FILE #: 3926.00

SUBMITTED:

AQS SITE SITE CODE:

REPORTED: 01/20/15 15:16

Sampled: 01/10/15 16:10

Received: 01/13/15 11:05

Analysis Date: 01/15/15 16:42

Honeywell Hex Chrome Study

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

01/13/15

Analyte

CAS Number

ng/m³ Air

<u>Flag</u>

ng/m3 Air

Hexavalent Chromium

1854-02-99

0.0132

0.0036

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PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

01/20/15 15:16 REPORTED:

SUBMITTED:

01/13/15

AQS SITE

CODE:

Honeywell Hex Chrome Study

Description:

PAM-3

Lab ID:

Sample Volume:

5011314-15

m³

Sampled: 01/10/15 15:57

Matrix: Comments:

Start Time 1/9/15 15:41

21.84

Received: 01/13/15 11:05

Analysis Date: 01/15/15 16:52

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

Analyte

CAS Number

ng/m³ Air

<u>Flag</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

ND

0.0036

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FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 01/20/15 15:16

Malvern, PA 19355

SUBMITTED:

01/13/15

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

FAX: (410) 266-8912

SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

PAM-4

Start Time 1/9/15 15:24

Lab ID:

5011314-16

Sampled: 01/10/15 15:45

Matrix:

Air

Sample Volume:

m³ 21.93

Received: 01/13/15 11:05

Analysis Date: 01/15/15 15:03

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

<u>Analyte</u>

CAS Number

ng/m³ Air

<u>Flaq</u>

ng/m3 Air

Hexavalent Chromium

1854-02-99

0.0322

0.0036

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Page 9 of 20



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

Description:

Comments:

ATTN: Mr. Jeff Boggs

Matrix:

PHONE: (443) 803-8495

Air

PAM-21

FAX: (410) 266-8912

Lab ID:

5011314-17

Sample Volume:

21.8

m³

FILE #: 3926.00

REPORTED:

SUBMITTED:

AQS SITE CODE:

Honeywell Hex Chrome Study

Sampled: 01/10/15 00:00

Received: 01/13/15 11:05

Analysis Date: 01/15/15 15:13

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

01/20/15 15:16

01/13/15

Analyte

CAS Number

ng/m³ Air

ng/m³ Air

Flag Hexavalent Chromium 1854-02-99 0.0036 ND

JAN 2 2 2015

Initials: CR

Eastern Research Group

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Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

SUBMITTED:

FILE #: 3926.00

REPORTED: 01/20/15 15:16

01/13/15

AQS SITE

CODE:

Honeywell Hex Chrome Study

Description:

Matrix:

Comments:

PAM-31

Air

Lab ID:

5011314-18

21.84 m³ Sampled: 01/10/15 00:00

Received: 01/13/15 11:05 Analysis Date: 01/15/15 15:23

Hexavalent Chromium by SOP ERG-MOR-063

Sample Volume:

Results

<u>MDL</u>

Analyte

CAS Number

ng/m³ Air

<u>Flaq</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

ND

0.0036

JAN 2 2 2015

Initials: CR

Eastern Research Group

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

Page 11 of 20



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

Description:

Comments:

ATTN: Mr. Jeff Boggs

Matrix:

PHONE: (443) 803-8495

FAX: (410) 266-8912

OAM 2

Air

Start Time 1/11/15 15:42

Lab ID:

5011314-20

Sample Volume:

21.81

m³

<u>Flaq</u>

FILE #: 3926.00

REPORTED:

SUBMITTED:

AQS SITE SITE CODE:

Honeywell Hex Chrome Study

Sampled: 01/12/15 15:21

Received: 01/13/15 11:05 Analysis Date: 01/15/15 15:33

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

01/20/15 15:16

01/13/15

Analyte

CAS Number

ng/m³ Air

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.261

0.0036

JAN 2 2 2015

Initials: CR



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/20/15 15:16

SUBMITTED:

01/13/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description: Matrix:

PAM-1

Air

Lab ID:

Sample Volume:

5011314-21

m³

Sampled: 01/12/15 16:27 Received: 01/13/15 11:05

Analysis Date: 01/15/15 13:23

Comments:

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

Hexavalent Chromium by SOP ERG-MOR-063

21.55

Results

<u>MDL</u>

Analyte

CAS Number

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0980

0.0036

JAN 2 2 2015

Initials: CR

Eastern Research Group

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



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 01/20/15 15:16

Malvern, PA 19355

SUBMITTED:

01/13/15

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

FAX: (410) 266-8912

SITE CODE:

Honeywell Hex Chrome Study

Description:

PAM-1D

Lab ID:

5011314-22

Sampled: 01/12/15 16:30

Matrix:

Air

Sample Volume:

21.52 m³ Received: 01/13/15 11:05

Comments:

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

Analysis Date: 01/15/15 13:43

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

Analyte

CAS Number

ng/m³ Air

<u>Flag</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0842

0.0036

JAN 2 2 2015

Initials: CR

Eastern Research Group

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



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 01/20/15 15:16

Malvern, PA 19355

01/13/15

ATTN: Mr. Jeff Boggs

SUBMITTED: AQS SITE

PHONE: (443) 803-8495

FAX: (410) 266-8912

SITE CODE:

Honeywell Hex Chrome Study

Description:

PAM-3

Lab ID: Sample Volume:

Sampled: 01/12/15 15:54

Matrix:

Air

5011314-24

m³

Received: 01/13/15 11:05

Comments:

Start Time 1/11/15 16:07

Analysis Date: 01/15/15 15:43

Hexavalent Chromium by SOP ERG-MOR-063

21.4

Results

MDL

Analyte

CAS Number

ng/m³ Air

<u>Flag</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0850

0.0036

JAN 2 2 2015

Initials: CR

Eastern Research Group

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

Page 15 of 20



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 01/20/15 15:16

01/13/15 SUBMITTED:

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

FAX: (410) 266-8912

SITE CODE:

Honeywell Hex Chrome Study

Description:

PAM-4

Lab ID: 5011314-25

Sampled: 01/12/15 15:44

Matrix:

Air

Sample Volume:

21.87 m³

Received: 01/13/15 11:05 Analysis Date: 01/15/15 15:53

Comments:

Start Time 1/11/15 16:01

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

ng/m³ Air

<u>Flaq</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0792

0.0036

JAN 2 2 2015

Initials: CR

Eastern Research Group

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Page 16 of 20



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/20/15 15:16

SUBMITTED: 01/13/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

PAM-21

Lab ID:

5011314-26

Sampled: 01/12/15 00:00 Received: 01/13/15 11:05

Comments:

Matrix: Air Sample Volume: 21.4

m³

Analysis Date: 01/15/15 16:03

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

<u>Analyte</u>

CAS Number

<u>ng/m³ Air</u>

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

ND

0.0036

JAN 2 2 2015

Initials: CR

Eastern Research Group

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Page 17 of 20



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

Description:

Comments:

Matrix:

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Air

PAM-31

FAX: (410) 266-8912

5011314-27

Sample Volume:

Lab ID:

21.4

m³

FILE #: 3926.00

REPORTED:

SUBMITTED:

AQS SITE CODE:

Honeywell Hex Chrome Study

Sampled: 01/12/15 00:00

Received: 01/13/15 11:05 Analysis Date: 01/15/15 16:13

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

01/20/15 15:16

01/13/15

Analyte

CAS Number

ng/m³ Air

<u>Flaq</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

ND

0.0036

JAN 2 2 2015

Initials: CR

Eastern Research Group

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

Page 18 of 20



LABORATORY DATA CONSULTANTS, INC.

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

ERM

January 27, 2015

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

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

Dear Mr. Boggs,

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

LDC Project #33545:

SDG

Fraction

5011436/5011519

Hexavalent Chromium

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

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

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

Sincerely,

Christina Rink

Project Manager/Chemist

Attachment 1 106 pages-SF 1 WEEK TAT LDC #33545 (ERM - Morrisville, NC / Harbor Point, MD, Hexavalent Chromium Monitoring) Level IV (3) DATE Cr(VI) DATE SDG# REC'D DUE (D7614) LDC Matrix: Air/Water/Soil 5011436/5011519 01/21/15 01/28/15 18 0 0 0 0 0 0 0 0 0 0 0 0 A/CR Total

Laboratory Data Consultants, Inc. Data Validation Report

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

Collection Date: January 13 through January 14, 2015

LDC Report Date: January 23, 2015

Matrix: Air

Parameters: Hexavalent Chromium

Validation Level: EPA Level IV

Laboratory: Eastern Research Group

Sample Delivery Group (SDG): 5011436/5011519

Sample Identification

OAM 1(01/13/15) PAM-1(01/14/15)DUP OAM 2(01/13/15) PAM-1D (01/14/15)DUP

PAM-1(01/13/15)
PAM-1D (01/13/15)

PAM-2(01/13/15) PAM-3(01/13/15)

PAM-3(01/13/15) PAM-4(01/13/15)

PAM-21(01/13/15)

PAM-31(01/13/15)

OAM 1(01/14/15)

OAM 2(01/14/15)

PAM-1(01/14/15)

PAM-1D (01/14/15)

PAM-2(01/14/15)

PAM-3(01/14/15)

PAM-4(01/14/15)

PAM-21(01/14/15)

PAM-31(01/14/15)

PAM-1(01/13/15)DUP

PAM-1D (01/13/15)DUP

Introduction

This data review covers 22 air samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per ASTM D7614 for Hexavalent Chromium.

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

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

The following are definitions of the data qualifiers:

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

I. Technical Holding Times

All technical holding time requirements were met.

II. Initial Calibration

All criteria for the initial calibration were met.

III. Continuing Calibration

Continuing calibration frequency and analysis criteria were met.

IV. Blanks

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

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

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

V. Matrix Spike/Matrix Spike Duplicates

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

VI. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

VII. Laboratory Control Samples

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

VIII. Sample Result Verification

All sample result verifications were acceptable.

IX. Overall Assessment of Data

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

X. Field Duplicates

Samples PAM-1(01/13/15) and PAM-1D (01/13/15) and samples PAM-1(01/14/15) and PAM-1D (01/14/15) were identified as field duplicates. No hexavalent chromium was detected in any of the samples with the following exceptions:

	Concentrat	on (ng/m³)			A or P	
Analyte	PAM-1(01/13/15)	PAM-1D (01/13/15)	RPD (Limits)	Flags		
Hexavalent chromium	0.0083	0.0085	2 (≤20)	-	-	

	Concentrat	ion (ng/m³)			
Analyte	PAM-1(01/14/15)	PAM-1D (01/14/15)	RPD (Limits)	Flags	A or P
Hexavalent chromium	0.0086	0.0131	41 (≤20)	NQ	-

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

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

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

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

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

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

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



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 01/21/15 15:33

Malvern, PA 19355

SUBMITTED:

01/14/15 to 01/15/15

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

FAX: (410) 266-8912

SITE CODE:

m³

Honeywell Hex Chrome Study

Description:

Comments:

OAM 1

Lab ID:

5011436-01

Sampled: 01/13/15 14:48

Matrix:

Start Time 1/12/15 15:01

Sample Volume:

21.4

Received: 01/14/15 13:01 **Analysis Date:** 01/20/15 14:47

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

<u>Analyte</u>

CAS Number

<u>ng/m³ Air</u>

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0111

0.0036

JAN 2 6 2015

Initials: CR

Eastern Research Group



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 01/21/15 15:33

21710 10.00

Malvern, PA 19355

SUBMITTED:

01/14/15 to 01/15/15

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

5 **FAX**: (410) 266-8912

CODE:

Honeywell Hex Chrome Study

Description:

OAM 2

Lab ID:

5011436-02

Sampled: 01/13/15 15:13

Matrix:

Air

Sample Volume:

21.42 m³

Received: 01/14/15 13:01 **Analysis Date:** 01/20/15 14:57

Comments:

Start Time 1/12/15 15:25

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte
Hexavalent Chromium

CAS Number 1854-02-99

ng/m³ Air

<u>Flaq</u>

ng/m³ Air 0.0036

.

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Initials: CR

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Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 01/21/15 15:33

Malvern, PA 19355

01/14/15 to 01/15/15

ATTN: Mr. Jeff Boggs

SUBMITTED: **AQS SITE**

SITE CODE:

m³

PHONE: (443) 803-8495

Honeywell Hex Chrome Study

Description:

PAM-1

Lab ID:

5011436-03

Sampled: 01/13/15 16:15

Matrix:

Air

Sample Volume:

Received: 01/14/15 13:01 Analysis Date: 01/20/15 12:48

Comments:

Col 1 Start Time 1/12/15 16:35

FAX: (410) 266-8912

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

Analyte

CAS Number

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0083

0.0036

JAN 2 6 2015

Initials: CR

Eastern Research Group



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FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

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Malvern, PA 19355

SUBMITTED:

01/14/15 to 01/15/15

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

FAX: (410) 266-8912

SITE CODE:

m³

Honeywell Hex Chrome Study

Description:

PAM-1D

Lab ID:

5011436-04

Hexavalent Chromium by SOP ERG-MOR-063

Sampled: 01/13/15 16:20

Matrix:

Sample Volume:

21.33

Received: 01/14/15 13:01 Analysis Date: 01/20/15 13:08

Comments:

Col 2 Start Time 1/12/15 16:38

Results

MDL

Analyte

CAS Number

ng/m³ Air

<u>Flag</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0085

0.0036

JAN 2 6 2015

Initials: CZ



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Matrix:

FAX: (410) 266-8912

FILE #:

3926.00

REPORTED: 01/21/15 15:33

01/14/15 to 01/15/15

SUBMITTED:

AQS SITE

m³

SITE CODE:

Honeywell Hex Chrome Study

Description:

PAM-2

Air

Lab ID:

Sample Volume:

5011436-05

21.42

Sampled: 01/13/15 16:04

Received: 01/14/15 13:01

Analysis Date: 01/20/15 15:07

Comments: Start Time 1/12/15 16:16

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

ng/m³ Air

<u>Flaq</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0500

0.0036

JAN 2 6 2015

Initials: CR

Eastern Research Group



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

Matrix:

PHONE: (443) 803-8495

Air

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

01/21/15 15:33

SUBMITTED:

01/14/15 to 01/15/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

PAM-3

Start Time 1/12/15 15:59

Lab ID:

Sample Volume:

5011436-06

21.44

m³

Sampled: 01/13/15 15:48

Received: 01/14/15 13:01 Analysis Date: 01/20/15 15:17

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

Analyte

CAS Number

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0076

0.0036

JAN 2 6 2015

Initials: CR

Eastern Research Group



Environmental Resources Management, Inc

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75 Valley Stream Parkway, Suite 400

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01/21/15 15:33

Malvern, PA 19355

SUBMITTED:

01/14/15 to 01/15/15

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

FAX: (410) 266-8912

SITE CODE:

Honeywell Hex Chrome Study

Description:

PAM-4

Lab ID:

5011436-07

Sampled: 01/13/15 15:39

Matrix:

Air

Sample Volume:

21.45

m³

Received: 01/14/15 13:01 Analysis Date: 01/20/15 15:27

Comments:

Start Time 1/12/15 15:49

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

Analyte

CAS Number

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0100

0.0036

JAN 2 6 2015

Initials: CR



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 01/21/15 15:33

Malvern, PA 19355

SUBMITTED:

01/14/15 to 01/15/15

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

SUPECODE:

Honeywell Hex Chrome Study

Description:

Comments:

PAM-21

Lab ID:

5011436-08

Sampled: 01/13/15 00:00

Matrix: Ai

Air

Sample Volume:

21.42

m³

Received: 01/14/15 13:01

Analysis Date: 01/20/15 15:37

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

Analyte
Hexavalent Chromium

CAS Number 1854-02-99

FAX: (410) 266-8912

ng/m³ Air ND

<u>Flag</u>

ng/m³ Air 0.0036

JAN 2 6 2015

Initials: CR

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FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 01/21/15 15:33

Malvern, PA 19355

SUBMITTED:

01/14/15 to 01/15/15

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

SITE CODE:

m³

Honeywell Hex Chrome Study

Description:

Comments:

PAM-31

FAX: (410) 266-8912

Lab ID:

5011436-09

Sampled: 01/13/15 00:00

Matrix:

Air

Sample Volume:

21.44

Received: 01/14/15 13:01 Analysis Date: 01/20/15 15:47

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte Hexavalent Chromium **CAS Number**

<u>ng/m³ Air</u>

<u>Flaq</u>

ng/m³ Air

1854-02-99

0.0036

JAN 2 6 2015

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Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 01/21/15 15:33

Malvern, PA 19355

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01/14/15 to 01/15/15

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

FAX: (410) 266-8912

SITE CODE:

Honeywell Hex Chrome Study

Description:

OAM 1

Lab ID:

5011519-01

Sampled: 01/14/15 15:01

Matrix:

Air

Sample Volume:

21.71

Analysis Date: 01/20/15 15:57

Received: 01/15/15 13:51

Comments: Start Time 1/13/15 14:54

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

Analyte

CAS Number

ng/m³ Air

<u>Flag</u>

m³

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0123

0.0036

JAN 2 6 2015

Initials: CR

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Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 01/21/15 15:33

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SUBMITTED:

01/14/15 to 01/15/15

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

FAX: (410) 266-8912

SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

OAM 2

Start Time 1/13/15 15:16

Lab ID:

5011519-02

Sampled: 01/14/15 15:21

Matrix:

Sample Volume:

21.67

Received: 01/15/15 13:51

Analysis Date: 01/20/15 16:06

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

ng/m³ Air

<u>Flag</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0157

0.0036

JAN 2 6 2015

Initials: CR

Eastern Research Group



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 01/21/15 15:33

Malvern, PA 19355

SUBMITTED:

01/14/15 to 01/15/15

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

FAX: (410) 266-8912

SITE CODE:

Honeywell Hex Chrome Study

Description:

PAM-1

Lab ID:

5011519-03

m³

Sampled: 01/14/15 16:12 Received: 01/15/15 13:51

Matrix: Comments:

Col 1 Start Time 1/13/15 16:19

Sample Volume:

21.5

Analysis Date: 01/20/15 13:28

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0086

0.0036

JAN 2 6 2015

Initials: CR

Eastern Research Group



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED:

01/21/15 15:33

Malvern, PA 19355

SUBMITTED:

01/14/15 to 01/15/15

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

FAX: (410) 266-8912

SITE CODE:

Honeywell Hex Chrome Study Sampled: 01/14/15 16:16

Description:

PAM-1D

Lab ID:

5011519-04

m³

Received: 01/15/15 13:51

Matrix: **Comments:**

Col 2 Start Time 1/13/15 16:23

Sample Volume:

21.49

Analysis Date: 01/20/15 13:48

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0131

0.0036

JAN 2 6 2015

Initials: CR

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Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

Matrix:

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/21/15 15:33

SUBMITTED:

01/14/15 to 01/15/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

PAM-2

Lab ID:

Sample Volume:

5011519-05

21.47

Sampled: 01/14/15 15:58

Received: 01/15/15 13:51

Analysis Date: 01/20/15 17:26

Comments:

Start Time 1/13/15 16:06

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

ng/m³ Air

<u>Flaq</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0445

0.0036

JAN 2 6 2015

Initials: CR



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 01/21/15 15:33

Malvern, PA 19355

SUBMITTED:

01/14/15 to 01/15/15

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

FAX: (410) 266-8912

SITE CODE:

Honeywell Hex Chrome Study

Description:

PAM-3

Lab ID:

5011519-06

Sampled: 01/14/15 15:48

Matrix:

Air

Sample Volume:

m³

Received: 01/15/15 13:51 Analysis Date: 01/20/15 17:36

Comments:

Start Time 1/13/15 15:51

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

ng/m³ Air

<u>Flag</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

ND

0.0036

JAN 2 6 2015

Initials: CR

Eastern Research Group



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 01/21/15 15:33

Malvern, PA 19355

SUBMITTED:

01/14/15 to 01/15/15

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

PAM-4

FAX: (410) 266-8912

Lab ID:

5011519-07

Sampled: 01/14/15 15:42

Matrix:

Sample Volume:

21.6 m³ Received: 01/15/15 13:51

Start Time 1/13/15 15:42

Analysis Date: 01/20/15 16:56

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

ng/m³ Air

<u>Flag</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0123

0.0036

JAN 2 6 2015

Initials: CR

Eastern Research Group



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 01/21/15 15:33

Malvern, PA 19355

SUBMITTED:

01/14/15 to 01/15/15

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

SITE CODE:

m³

Honeywell Hex Chrome Study

Description:

PAM-21

Lab ID:

5011519-08

Sampled: 01/14/15 00:00

Matrix:

Air

Sample Volume:

21.47

Received: 01/15/15 13:51

Comments:

Analysis Date: 01/20/15 17:06

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

FAX: (410) 266-8912

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

ND

0.0036

JAN 2 6 2015

Initials: CR

Eastern Research Group

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

Page 19 of 22



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 01/21/15 15:33

Malvern, PA 19355

SUBMITTED:

01/14/15 to 01/15/15

ATTN: Mr. Jeff Boggs

AQS SITE

 m^3

PHONE: (443) 803-8495

SITE CODE:

Honeywell Hex Chrome Study

Description:

PAM-31

Lab ID:

5011519-09

Sampled: 01/14/15 00:00

Matrix:

Air

Sample Volume:

21.54

Received: 01/15/15 13:51

Comments:

Analysis Date: 01/20/15 17:16

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

Analyte

CAS Number

ng/m³ Air

<u>Flag</u>

ng/m³ Air 0.0036

Hexavalent Chromium

1854-02-99

FAX: (410) 266-8912

ND

JAN 2 6 2015

Initials: CR

LDC #: 33545A6

SDG #: 5011436/5011519

VALIDATION COMPLETENESS WORKSHEET

Level IV

Laboratory: Eastern Research Group

2nd Reviewer:

METHOD: (Analyte) Hexavalent Chromium (ASTM D7614)

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

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	1/13-14/15
11	Initial calibration	A	
111.	Calibration verification	A	
IV	Laboratory Blanks	A	
	Field blanks	100	FB=(8)(n) TB=(9)(8)
VI.	Matrix Spike/Matrix Spike Duplicates	N	Not Required
VII.	Duplicate sample analysis	A	DUR = OK by diff
VIII.	Laboratory control samples	A	LUSTO
IX.	Field duplicates	SW	FD=(3,4) (12,13)
X	Sample result verification	A	/
LxL	Overall assessment of data	\triangleright	

Note:

A = Acceptable

N = Not provided/applicable SW = See worksheet ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate TB = Trip blank

EB = Equipment blank

SB=Source blank OTHER:

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

LDC #: 33545A6

SDG #: 5011436/5011519

VALIDATION COMPLETENESS WORKSHEET

Level IV

Laboratory: Eastern Research Group

Date: 1/21/15
Page: 2 of 2
Reviewer: 30
2nd Reviewer: 4

METHOD: (Analyte) Hexavalent Chromium (ASTM D7614)

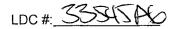
	Client ID	Lab ID	Matrix	Date
18	PAM-31(01/14/15)	5011519-09	air	01/14/15
19	PAM-1(01/13/15)DUP	5011436-03DUP	air	01/13/15
20	PAM-1D(01/13/15)DUP	5011436-04DUP	air	01/13/15
21	PAM-1(01/14/15)DUP	5011519-03DUP	air	01/14/15
22	PAM-1D(01/14/15)DUP	5011519-04DUP	air	01/14/15
23				
24				
25				

LDC #: 33545 AS

Page: of Z Reviewer: 200

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 99-110% QC limits?	/						
Were titrant checks performed as required? (Level IV only)							
Were balance checks performed as required? (Level IV only)							
III. Blanks							
Was a method blank associated with every sample in this SDG?	\						
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		/					
IV. Matrix spike/Matrix spike duplicates and Duplicates							
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	/						
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.							
Were the MS/MSD or duplicate relative percent differences (RPD) \leq 20% for waters and \leq 35% for soil samples? A control limit of \leq CRDL(\leq 2X CRDL for soil) was used for samples that were \leq 5X the CRDL, including when only one of the duplicate sample values were \leq 5X the CRDL.	/						
V. Laboratory control samples							
Was an LCS 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 FINDINGS CHECKLIST

Page: Zof Z Reviewer: SO 2nd Reviewer: O

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

LDC# 33545A6

VALIDATION FINDINGS WORKSHEET

Field Duplicates

Page: ___ of ___ Reviewer: ____ 2nd Reviewer: ____

Inorganics: Method See Cover

	Concentrati			
Analyte	3	4	RPD (≤20)	Qual.
Hexavalent Chromium	0.0083	0.0085	2	

	Concentrati			
Analyte	12	13	RPD (≤20)	Qual.
Hexavalent Chromium	0.0086	0.0131	41	NQ

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

 $\verb|\LDCFILESERVER|\Validation|\FIELD DUPLICATES|\FD_inorganic|\wettemp.WPD|$

LDC #: 33545PX

Validation Findings Worksheet Initial and Continuing Calibration Calculation Verification

Page:_\	_of_	<u>\</u>
Reviewer:_	3	>
nd Review	er:	α_{\perp}

Method:	Inorganics,	Method	See Cover	

The correlation coefficient (r) for the calibration of ______was recalculated.Calibration date: 1/21/15

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

%R = Found X 100

Where,

Found = concentration of each analyte measured in the analysis of the ICV or CCV solution

True

True = concentration of each analyte in the ICV or CCV source

					Recalculated	Reported	Acceptable
Type of analysis	Analyte	Standard	Conc. (ng/ml)	Area	r or r ²	r or r ²	(Y/N)
Initial calibration		s1	0.05	0.000025			
		s2	0.1	0.0000445	0.99995	0.99995	
	1-40	s3	0.2	0.0000843			4
	C	s4	0.5	0.0002205			
		s5	1	0.0004539			1
		s6	2	0.0009041			
Calibration verification	Cr*	Fand 0.5003 rg/m	True 0.5 mg/ml		100.1%P	100.182	
Calibration verification	Conth	0.4970 mjm1	0.5 mghul		99.4%R	99.4%e	
Calibration verification							

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

LDC #: 33545A60

VALIDATION FINDINGS WORKSHEET Level IV Recalculation Worksheet

	Page:_	or
	Reviewer:_	av
2nd	Reviewer:	01

METHOD: Inorganics,	Method	Sec	Carron	
WEITIOD. IIIOI garilos,	Method		Cesoex	

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

 $%R = Found \times 100$ True

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 = $|S-D| \times 100$ (S+D)/2 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)
LUS	Laboratory control sample	Cxilo	1.05 ng/ml	ار00 مراساً	105%P	105%,2	J
7)	Matrix spike sample		(SSR-SR)				
14,0J	Duplicate sample	Crip	0.0108 ng/m²	0.0082nglu3	27.4%890	27.0%	7

Comments:				
	 _	 		

LDC#: 33545A

VALIDATION FINDINGS WORKSHEET

Sample Calculation Verification

Page: \ of \
Reviewer: \ 2nd reviewer: \ C1

METH	IOD: Inorganics, Metho	d See Cover						
Y N Y N M N Comp	N/A Have results work N/A Are results work Are all detect ound (analyte) results fulated and verified using	bow for all questions answ been reported and calculation the calibrated range tion limits below the CRC for	alated correctly? e of the instrument L?	s? repo	orted with a positiv	re detect were		
Concer	itration = (A-Co) (VE=10ml Recal	Iculation:	00062-(-2	160-720			
A C & Ge	Concentration = $(A-C_0) _{C_1}$ $Vf=10ml$ Recalculation: $(0.0000062-(-205E-06))$ $A=0.0000062$ $(n_0 _{C_1})(vf)$ $(0.00004532-0.0182)$ $(n_0 _{C_1})(vf)$							
#	Sample ID	Analyte		Reported Concentration	Calculated Concentration (Ng/M3)	Acceptable (Y/N)		
	\	Cx	77	0.0111	0.011	4		
	2)		OU	40	4		
	3			0.0083	0.0082	7*		
	4			0.0085	0,0085	Y		
	2			D.0500	0.0200			
	6		<u> </u>	0.0076	0.0076			
	7			0.0100	0.0100			
	8			ND	20			
	9			DD_	U0			
	(0)			0.0123	0.002	4*		
	1/			0.0157	0.01	7		
	12			0.0086	D.0086	j		
	13			0.0131	0.0132	y*		
	14			2445.0	2.0442	<u>y</u>		
	12			120		7		
	<u> </u>			0.003	0.0122	4%		
	17			D0	DD	5		
	18		1	DQ	20	7		
Note:_	*Randing							



LABORATORY DATA CONSULTANTS, INC.

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

ERM January 28, 2015

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

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

Dear Mr. Boggs,

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

LDC Project #33556:

SDG Fraction

5011617/5012023 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.

Christina Rink

Sincerely,

Project Manager/Chemist

Attachment 1 107 pages-SF 1 WEEK TAT LDC #33556 (ERM - Morrisville, NC / Harbor Point, MD, Hexavalent Chromium Monitoring) Level-IV (3) DATE Cr(VI) DATE (D7614) LDC SDG# REC'D DUE Matrix: Air/Water/Soil 5011617/5012023 01/23/15 01/30/15 18 0 Total A/CR

Laboratory Data Consultants, Inc. Data Validation Report

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

Collection Date: January 15 through January 16, 2015

LDC Report Date: January 28, 2015

Matrix: Air

Hexavalent Chromium Parameters:

Validation Level: **EPA Level IV**

Laboratory: Eastern Research Group

Sample Delivery Group (SDG): 5011617/5012023

Sample Identification

OAM 1(1/15/15) PAM-1(1/16/15)DUP

PAM-1D (1/16/15)DUP OAM 2(1/15/15) PAM-1(1/15/15)

PAM-1D (1/15/15)

PAM-2(1/15/15)

PAM-3(1/15/15)

PAM-4(1/15/15)

PAM-21(1/15/15)

PAM-31(1/15/15)

OAM 1(1/16/15)

OAM 2(1/16/15)

PAM-1(1/16/15)

PAM-1D (1/16/15)

PAM-2(1/16/15) PAM-3(1/16/15)

PAM-4(1/16/15)

PAM-21(1/16/15)

PAM-31(1/16/15)

PAM-1(1/15/15)DUP

PAM-1D (1/15/15)DUP

Introduction

This data review covers 22 air samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per ASTM D7614 for Hexavalent Chromium.

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

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

The following are definitions of the data qualifiers:

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

I. Technical Holding Times

All technical holding time requirements were met.

II. Initial Calibration

All criteria for the initial calibration were met.

III. Continuing Calibration

Continuing calibration frequency and analysis criteria were met.

IV. Blanks

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

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

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

V. Matrix Spike/Matrix Spike Duplicates

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

VI. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

VII. Laboratory Control Samples

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

VIII. Sample Result Verification

All sample result verifications were acceptable.

IX. Overall Assessment of Data

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

X. Field Duplicates

Samples PAM-1(1/15/15) and PAM-1D (1/15/15) and samples PAM-1(1/16/15) and PAM-1D (1/16/15) were identified as field duplicates. No hexavalent chromium was detected in any of the samples with the following exceptions:

	Concentration (ng/m³)		ann		
Analyte	PAM-1(1/15/15)	PAM-1D (1/15/15)	RPD (Limits)	Flags	A or P
Hexavalent chromium	0.0348	0.0296	16 (≤20)	-	-

	Concentrati	ion (ng/m³)			
Analyte	PAM-1(1/16/15)	PAM-1D (1/16/15)	RPD (Limits)	Flags	A or P
Hexavalent chromium	0.0312	0.0304	3 (≤20)	-	-

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

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

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

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

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

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

LDC #: SDG #:

VALIDATION COMPLETENESS WORKSHEET

Level IV Laboratory: Eastern Research Group

2nd Reviewer

METHOD: (Analyte) Hexavalent Chromium (ASTM D7614)

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

<u></u>	Validation Area	<u> </u>	<u>Comments</u>
1.	Sample receipt/Technical holding times	A	1118/15 - 11/2/15
lt.	Initial calibration	A	
111.	Calibration verification	A	
IV	Laboratory Blanks	A	
V	Field blanks	OCI	FB=(8)(n) TB=(9)(B)
VI.	Matrix Spike/Matrix Spike Duplicates	N	Not Required.
VII.	Duplicate sample analysis	A	DOS,
VIII.	Laboratory control samples	A	LUSID
IX.	Field duplicates	Su	FD=(3,4)(12,13)
Х.	Sample result verification	A	, ,
ΧI	Overall assessment of data	LA	

Note:

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

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank OTHER:

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

LDC #: 335456A6

SDG #: 5011617/5012023

Laboratory: Eastern Research Group

VALIDATION COMPLETENESS WORKSHEET

Level IV

Date: 1/26/15

Page: 2 of 2 Reviewer: 30 2nd Reviewer: _______

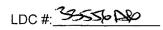
METHOD: (Analyte) Hexavalent Chromium (ASTM D7614)

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

Method: Inorganics (EPA Method See (aven)

Method:Inorganics (EPA Method Se Coe)				
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 9 0-110 % QC limits?	/			
Were titrant checks performed as required? (Level IV only)			_	
Were balance checks performed as required? (Level IV only)				
III. Blanks				
Was a method blank associated with every sample in this SDG?	/			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		/		
IV. Matrix spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	/			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.			/	
Were the MS/MSD or duplicate relative percent differences (RPD) \leq 20% for waters and \leq 35% for soil samples? A control limit of \leq CRDL(\leq 2X CRDL for soil) was used for samples that were \leq 5X the CRDL, including when only one of the duplicate sample values were \leq 5X the CRDL.	/			
V. Laboratory control samples	,			
Was an LCS 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?				

Live



VALIDATION FINDINGS CHECKLIST

Page: ² of 2 Reviewer: ≤> 2nd Reviewer: ≤

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

LDC#<u>33556A6</u>

VALIDATION FINDINGS WORKSHEET

Field Duplicates

Inorganics: Method See Cover

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

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

\LDCFILESERVER\Validation\FIELD DUPLICATES\FD_inorganic\33556A6.wpd

LDC #: 3355546

Validation Findings Worksheet Initial and Continuing Calibration Calculation Verification

Page: \	_ of _	<u>\</u>	
Reviewer:	2	\mathcal{Q}	
2nd Review	er:	9	

Method: Ino	rganics, Method	See Cover	

The correlation coefficient (r) for the calibration of 💢 was recalculated.Calibration date: 💍 🗀 🗀

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

%R = Found X 100

Where,

Found = concentration of each analyte measured in the analysis of the ICV or CCV solution

True

True = concentration of each analyte in the ICV or CCV source

					Recalculated	Reported	Acceptable
Type of analysis	Analyte	Standard	Conc. (ng/mL)	Area	r or r ²	r or r ²	(Y/N)
Initial calibration		s1	0.05	0.0000144			
		s2	0.1	0.0000392	0.99975	0.99974	
	ماد ک	s3	0.2	0.000076	_		4
		s4	0.5	0.0002225			7
		s5	1	0.0004291			
		s6	2	0.0009013			
ILV 10:50	CENO	Found	True				i
Calibration verification		0.507m/	O. Srylul		100.3%	100.37L	<u> </u>
CC 11:49	C26	3					\
Calibration verification		Men CEPU. O	0. Svalul		99.0%	99.0%R	3
Calibration verification							

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

*Rounding

LDC #: 33556A6

VALIDATION FINDINGS WORKSHEET Level IV Recalculation Worksheet

Page:_	<u>\</u> of <u>\</u>
Reviewer:	<u>Z0</u>
2nd Reviewer:	Q

METHOD: Inorganics,	Method	See	Cover

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

 $%R = Found \times 100$ True

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:

 $RPD = [S-D] \times 100$

Where,

S =

Original sample concentration

(S+D)/2

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)
145	Laboratory control sample	220	1.02 ng/m/	1-00 reglad	102%R	105%6	5)
2	Matrix spike sample		(SSR-SR)				
DUP	Duplicate sample	Crabo	0.03765mlm3	0.03469mg/m3	8.18820	8.16%80	∀ *

Comments:	* Roundina	 	-	

LDC#: 33556AX6

VALIDATION FINDINGS WORKSHEET

Sample Calculation Verification

Page:_	<u>\</u> of\
Reviewer:	30
2nd reviewer:	C_{Δ}

METHOD: Inorganics, Method	od <u>See Cover</u>			
Y N N/A Have results Y N N/A Are results	low for all questions answered "N". Not appl s been reported and calculated correctly? within the calibrated range of the instrument ction limits below the CRQL?		e identified as "N/	A".
Compound (analyte) results recalculated and verified usi		repc	orted with a positiv	ve detect were
Concentration = $A-C_D/C$,	Recalculation: (0.0000	189-(-1.03E-	= 0.06	44 nglul
78000000	1.00	0.000453)		200
6=-1.03E-05	(nghi)(h) = nghi3 (0	0644nalu) (15	sims) = a	030H ng/ m2
C1= 0.0004531	m³ Jan	21.2		USSA MAIN
		Reported	Calculated	

#	Sample ID	Analyte	Reported Concentration (YC ₁ W ²)	Calculated Concentration (火火火火)	Acceptable (Y/N)
	(Crab	0.0264	0.0263	7)
	2)	0.0254	0.0254	7
	3		8450.0	0.0347	7*
	4		0.0296	0.0295	3*
	2		0.0412	0-0411	4*
	6		0.0234	0.0234	7
	7		0.0384	0.0323	74
	8		00	<i>ND</i>	3
	9		100	ND	
	N		0.0209	0.0789	4
	- II		4910.0	0.0193	7,*
	12		0.0317	0.03/2	J
	13		0-0304	0.0304	
	14		0-0210	0.020	
	15		ND	100	
	16		0.0606	0.0600	
	17		ND	NO	
	18	J	ND	ND	<u> </u>

Note:	* Rounding		
-		,	



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Air

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/23/15 09:32

01/16/15 to 01/20/15

SUBMITTED:

AQS SITE CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description:

Matrix:

OAM 1

Lab ID:

Sample Volume:

5011617-01

21.47 m³ Sampled: 01/15/15 14:55

Received: 01/16/15 10:15 Analysis Date: 01/21/15 14:08

Comments: Start Time 1/14/15 15:03

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

<u>Analyte</u>

CAS Number

<u>ng/m³ Air</u>

<u>Flag</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0264

0.0036

JAN 2 8 2015



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FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/23/15 09:32

SUBMITTED:

01/16/15 to 01/20/15

AQS SITE CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description:

OAM 2

Lab ID:

5011617-02

m³

Sampled: 01/15/15 15:14

Matrix: Air Comments:

Start Time 1/14/15 15:24

Sample Volume:

21.45

Received: 01/16/15 10:15 Analysis Date: 01/21/15 14:18

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

ng/m³ Air

<u>Flaq</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0254

0.0036

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PHONE: (443) 803-8495

Air

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/23/15 09:32

SUBMITTED:

01/16/15 to 01/20/15

AQS SITE CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

Matrix:

PAM-1

Lab ID:

Sample Volume:

5011617-03

21.63 m³

Sampled: 01/15/15 16:15 Received: 01/16/15 10:15

Analysis Date: 01/21/15 12:09

Col 1 Start Time 1/14/15 16:15

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

Analyte Hexavalent Chromium **CAS Number** 1854-02-99

ng/m³ Air 0.0348

<u>Flag</u>

ng/m³ Air 0.0036

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Initials: CR

Eastern Research Group

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Page 5 of 22



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Malvern, PA 19355

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PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/23/15 09:32

01/16/15 to 01/20/15

SUBMITTED:

AQS SITE CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description:

PAM-1D

Lab ID:

Sample Volume:

5011617-04

21.65 m³ Sampled: 01/15/15 16:19 Received: 01/16/15 10:15

Analysis Date: 01/21/15 12:29

Matrix: Comments:

Col 2 Start Time 1/14/15 16:19

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

Analyte

CAS Number

ng/m³ Air

Flag

ng/m3 Air

Hexavalent Chromium

1854-02-99

0.0296

0.0036

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Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Air

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/23/15 09:32

01/16/15 to 01/20/15

SUBMITTED:

AQS SITE CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description:

Matrix:

PAM-2

Lab ID:

Sample Volume:

5011617-05

 m^3

Sampled: 01/15/15 16:06 Received: 01/16/15 10:15

Analysis Date: 01/21/15 14:28

Comments: Start Time 1/14/15 16:01

Hexavalent Chromium by SOP ERG-MOR-063

21.68

Results

MDL

Analyte

CAS Number

<u>ng/m³ Air</u>

<u>Flaq</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0412

0.0036

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Environmental Resources Management, Inc

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Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Air

Start Time 1/14/15 15:50

FAX: (410) 266-8912

FILE #:

3926.00

REPORTED:

01/23/15 09:32

SUBMITTED:

01/16/15 to 01/20/15

AQS SITE CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

Matrix:

PAM-3

Lab ID:

5011617-06

Sample Volume:

21.72

m³

Sampled: 01/15/15 15:58 Received: 01/16/15 10:15

Analysis Date: 01/21/15 14:38

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

Analyte

CAS Number

<u>ng/m³ Air</u>

<u>Flag</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0234

0.0036

JAN 2 8 2015



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Malvern, PA 19355

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PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/23/15 09:32

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

AQS SITE CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

PAM-4

Lab ID:

Sample Volume:

5011617-07

Sampled: 01/15/15 15:40

Matrix: Air

Start Time 1/14/15 15:45

21.53 m³

Received: 01/16/15 10:15 Analysis Date: 01/21/15 14:48

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

ng/m³ Air

<u>Flaq</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0384

0.0036

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Malvern, PA 19355

Description:

Comments:

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Matrix:

Air

PAM-21

FAX: (410) 266-8912

Lab ID:

5011617-08

Sample Volume: 21.68

m³

FILE #: 3926.00

SUBMITTED:

SITE CODE:

AQS SITE CODE:

REPORTED: 01/23/15 09:32

Honeywell Hex Chrome Study

Sampled: 01/15/15 00:00 Received: 01/16/15 10:15

Analysis Date: 01/21/15 14:58

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

01/16/15 to 01/20/15

Analyte Hexavalent Chromium **CAS Number** 1854-02-99

ng/m³ Air ND

<u>Flaq</u>

ng/m³ Air 0.0036

JAN 2 8 2015



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Description:

Comments:

ATTN: Mr. Jeff Boggs

Matrix:

PHONE: (443) 803-8495

PAM-31

FAX: (410) 266-8912

Lab ID:

5011617-09

Sample Volume:

21.72

m³

SUBMITTED:

SITE CODE:

AQS SITE CODE:

FILE #: 3926.00

REPORTED: 01/23/15 09:32

Honeywell Hex Chrome Study

Sampled: 01/15/15 00:00

Received: 01/16/15 10:15 Analysis Date: 01/21/15 15:08

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

01/16/15 to 01/20/15

Hexavalent Chromium

Analyte

CAS Number 1854-02-99

ng/m³ Air ND

<u>Flag</u>

ng/m³ Air 0.0036

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Description:

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/23/15 09:32

SUBMITTED:

01/16/15 to 01/20/15

AQS SITE CODE:

OAM 1

Lab ID:

Sample Volume:

5012023-01

21.57

m³

SITE CODE:

Honeywell Hex Chrome Study

Sampled: 01/16/15 14:56

Received: 01/20/15 11:32 Analysis Date: 01/21/15 15:18

Matrix: Comments:

Start Time 1/15/15 14:58

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

<u>Analyte</u>

Hexavalent Chromium

CAS Number 1854-02-99

ng/m³ Air 0.0209

<u>Flag</u>

ng/m³ Air 0.0036

JAN 2 8 2015

Initials: CR

Eastern Research Group

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Environmental Resources Management, Inc

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Malvern, PA 19355

Description:

Comments:

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Matrix:

OAM 2

FAX: (410) 266-8912

Start Time 1/15/15 15:17

Lab ID:

5012023-02

Sample Volume:

21.6

m³

Flag

SUBMITTED: AQS SITE CODE:

SITE CODE:

FILE #: 3926.00

REPORTED: 01/23/15 09:32

Honeywell Hex Chrome Study

Sampled: 01/16/15 15:17

Received: 01/20/15 11:32 Analysis Date: 01/21/15 15:28

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

01/16/15 to 01/20/15

ng/m³ Air

ng/m³ Air

0.0036

<u>Analyte</u> **Hexavalent Chromium** **CAS Number** 1854-02-99

0.0194

JAN 2 8 2015



Environmental Resources Management, Inc

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Malvern, PA 19355

Description:

Comments:

Analyte

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Matrix:

PAM-1 Air

Col 1 Start Time 1/15/15 16:21

FAX: (410) 266-8912

Lab ID: 5012023-03

Sample Volume:

21.22

 m^3

FILE #: 3926.00

SUBMITTED:

SITE CODE:

AQS SITE CODE:

REPORTED: 01/23/15 09:32

Honeywell Hex Chrome Study

Sampled: 01/16/15 15:56 Received: 01/20/15 11:32

Analysis Date: 01/21/15 12:49

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

01/16/15 to 01/20/15

<u>Flaq</u>

ng/m³ Air 0.0036

ng/m³ Air **CAS Number Hexavalent Chromium** 1854-02-99 0.0312

JAN 2 8 2015



Environmental Resources Management, Inc.

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ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Col 2 Start Time 1/15/15 16:25

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/23/15 09:32

SUBMITTED:

01/16/15 to 01/20/15

AQS SITE CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

PAM-1D

Lab ID:

5012023-04

Sampled: 01/16/15 15:58

Matrix:

Sample Volume:

21.2

m³

Received: 01/20/15 11:32

Analysis Date: 01/21/15 17:16

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0304

0.0036

JAN 2 8 2015



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

Description:

Comments:

ATTN: Mr. Jeff Boggs

Matrix:

PHONE: (443) 803-8495

PAM-2

Start Time 1/15/15 16:09

FAX: (410) 266-8912

Lab ID:

Sample Volume:

5012023-05

21.28

т³

SUBMITTED:

SITE CODE:

AQS SITE CODE:

FILE #: 3926.00

REPORTED: 01/23/15 09:32

Honeywell Hex Chrome Study

Sampled: 01/16/15 15:48

Received: 01/20/15 11:32 Analysis Date: 01/21/15 15:37

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

01/16/15 to 01/20/15

Analyte Hexavalent Chromium **CAS Number** 1854-02-99

ng/m³ Air 0.0210

<u>Flaq</u>

ng/m³ Air 0.0036

JAN 2 8 2015

Initials: CR

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Page 16 of 22



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

Description:

Comments:

ATTN: Mr. Jeff Boggs

Matrix:

PHONE: (443) 803-8495

PAM-3

Start Time 1/15/15 16:01

FAX: (410) 266-8912

Lab ID:

Sample Volume:

5012023-06

21.33

m³

SITE CODE:

FILE #: 3926.00

SUBMITTED:

AQS SITE CODE:

REPORTED: 01/23/15 09:32

Honeywell Hex Chrome Study

Sampled: 01/16/15 15:43

Received: 01/20/15 11:32

Analysis Date: 01/21/15 16:54

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

01/16/15 to 01/20/15

Analyte Hexavalent Chromium CAS Number 1854-02-99

ng/m³ Air ND

<u>Flag</u>

ng/m³ Air 0.0036

JAN 2 8 2015



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ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/23/15 09:32

SUBMITTED:

01/16/15 to 01/20/15

AQS SITE CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

PAM-4

Start Time 1/15/15 15:43

Lab ID:

5012023-07

Sampled: 01/16/15 15:36

Matrix:

Air

Sample Volume:

21.48

m³

Received: 01/20/15 11:32

Analysis Date: 01/21/15 16:17

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL.

<u>Analyte</u>

CAS Number

<u>nq/m³ Air</u>

<u>Flaq</u>

<u>ng/m³ Air</u>

Hexavalent Chromium

1854-02-99

0.0606

0.0036

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Page 18 of 22



Environmental Resources Management, Inc

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Description:

Comments:

Matrix:

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

PAM-21

FAX: (410) 266-8912

Lab ID:

5012023-08

Sample Volume:

21.28

m³

Flag

SUBMITTED:

SITE CODE:

AQS SITE CODE:

FILE #: 3926.00

REPORTED: 01/23/15 09:32

Honeywell Hex Chrome Study

Sampled: 01/16/15 00:00

Received: 01/20/15 11:32 Analysis Date: 01/21/15 16:27

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

Hexavalent Chromium

Analyte

CAS Number 1854-02-99

ng/m³ Air ND

ng/m³ Air

0.0036

01/16/15 to 01/20/15

JAN 2 8 2015

Initials: CR

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ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Air

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/23/15 09:32

01/16/15 to 01/20/15

SUBMITTED: AQS SITE CODE:

SITE CODE:

Honeywell Hex Chrome Study

Description:

Matrix:

PAM-31

Lab ID:

Sample Volume:

5012023-09

m³

<u>Flag</u>

Sampled: 01/16/15 00:00

Received: 01/20/15 11:32 Analysis Date: 01/21/15 16:37

Comments:

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

Analyte Hexavalent Chromium **CAS Number** 1854-02-99

ng/m³ Air ND

21.33

ng/m³ Air

0.0036

JAN 2 8 2015

Initials: CR

Eastern Research Group

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

Page 20 of 22

Laboratory Data Consultants, Inc. Data Validation Report

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

Collection Date: January 19 through January 20, 2015

LDC Report Date: January 28, 2015

Matrix: Air

Parameters: Hexavalent Chromium

Validation Level: EPA Level IV

Laboratory: Eastern Research Group

Sample Delivery Group (SDG): 5012023/5012118

Sample Identification

OAM 1(1/19/15) PAM-1(1/20/15)DUP OAM 2(1/19/15) PAM-1D (1/20/15)DUP

PAM-1(1/19/15) PAM-1D (1/19/15) PAM-2(1/19/15)

PAM-3(1/19/15)

PAM-4(1/19/15)

PAM-21(1/19/15)

PAM-31(1/19/15)

OAM 1(1/20/15)

OAM 2(1/20/15)

PAM-1(1/20/15)

PAM-1D (1/20/15)

PAM-2(1/20/15) PAM-3(1/20/15)

PAM-4(1/20/15)

PAM-21(1/20/15)

PAM-31(1/20/15)

PAM-1(1/19/15)DUP

PAM-1D (1/19/15)DUP

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

Introduction

This data review covers 22 air samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per ASTM D7614 for Hexavalent Chromium.

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

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

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- NJ Presumptive evidence of presence of the compound at an estimated quantity.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

II. Initial Calibration

All criteria for the initial calibration were met.

III. Continuing Calibration

Continuing calibration frequency and analysis criteria were met.

IV. Blanks

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

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

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

V. Matrix Spike/Matrix Spike Duplicates

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

VI. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

VII. Laboratory Control Samples

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

VIII. Sample Result Verification

All sample result verifications were acceptable.

IX. Overall Assessment of Data

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

X. Field Duplicates

Samples PAM-1(1/19/15) and PAM-1D (1/19/15) and samples PAM-1(1/20/15) and PAM-1D (1/20/15) were identified as field duplicates. No hexavalent chromium was detected in any of the samples with the following exceptions:

	Concentrat	ion (ng/m³)			
Analyte	PAM-1(1/19/15)	PAM-1D (1/19/15)	RPD (Limits)	Flags	A or P
Hexavalent chromium	0.0308	0.0254	19 (≤20)	-	-

	Concentrat	Concentration (ng/m³)			
Analyte	PAM-1(1/20/15)	PAM-1D (1/20/15)	RPD (Limits)	Flags	A or P
Hexavalent chromium	0.115	0.101	13 (≤20)	<u>-</u>	-

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

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

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

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

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

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

VALIDATION COMPLETENESS WORKSHEET

SDG #: 5012023/5012118 Laboratory: Eastern Research Group

LDC #: 33590B6

Level IV

Page: _of _ Reviewer: 30 2nd Reviewer:

Date: 1/27/15

METHOD: (Analyte) Hexavalent Chromium (ASTM D7614)

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

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	1/19-20/19
li li	Initial calibration	A	
111.	Calibration verification	A	
IV_	Laboratory Blanks	A	
V	Field blanks	ND	FB=(8)(17) TB=(9)(8)
VI.	Matrix Spike/Matrix Spike Duplicates	N	Not Required
VII.	Duplicate sample analysis	A	DUR
VIII.	Laboratory control samples	A	LISTO
IX.	Field duplicates	SW	FD=(3.4) (12.13)
X	Sample result verification	A	, , ,
xı	Overall assessment of data	A	

Note:

A = Acceptable

N = Not provided/applicable SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank OTHER:

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

LDC	#:	33590B6

SDG #: 5012023/5012118

Laboratory: Eastern Research Group

VALIDATION COMPLETENESS WORKSHEET

Level IV

Reviewer: 2nd Reviewer:

METHOD: (Analyte) Hexavalent Chromium (ASTM D7614)

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

LDC#: 3359086

VALIDATION FINDINGS CHECKLIST

Page: \lof \frac{2}{2}
Reviewer: \frac{2}{2}

Method:Inorganics (EPA Method See Love)

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 99 -110 % QC limits?	/					
Were titrant checks performed as required? (Level IV only)			/			
Were balance checks performed as required? (Level IV only)						
III. Blanks						
Was a method blank associated with every sample in this SDG?						
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		_	!			
IV. Matrix spike/Matrix spike duplicates and Duplicates						
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.						
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	Ð		/			
Were the MS/MSD or duplicate relative percent differences (RPD) \leq 20% for waters and \leq 35% for soil samples? A control limit of \leq CRDL(\leq 2X CRDL for soil) was used for samples that were \leq 5X the CRDL, including when only one of the duplicate sample values were \leq 5X the CRDL.						
V. Laboratory control samples						
Was an LCS 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?			1			



VALIDATION FINDINGS CHECKLIST

Page: Zof Z Reviewer: 3:0 2nd Reviewer: 7

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

LDC# 33590B6

VALIDATION FINDINGS WORKSHEET

Field Duplicates

Page: _	\ o <u>f \</u>
Reviewer:	<u> </u>
2nd Reviewer:_	α

Inorganics: Method See Cover

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

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

 $\verb|\LDCFILESERVER|\Validation|\FIELD DUPLICATES|\FD_inorganic|\33590B6.wpd|$

LDC #: 35590840

Validation Findings Worksheet Initial and Continuing Calibration Calculation Verification

Page:\	of_
Reviewer:	<u> </u>
nd Reviewe	er: 🔍

Method: Inorganics, Method _	See Cover
------------------------------	-----------

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

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

%R = Found X 100

Where,

Found = concentration of each analyte <u>measured</u> in the analysis of the ICV or CCV solution

True = concentration of each analyte in the ICV or CCV source

		<u> </u>			Recalculated	Reported	Acceptable
Type of analysis	Analyte	Standard	Conc. (ng/ml)	Area	r or r ²	r or r ²	(Y/N)
Initial calibration		s1	0.05	0.0000135			
		s2	0.1	0.0000317	0.99999	0.99999	
		s3	0.2	0.0000763			L U
	(- 44	s4	0.5	0.0002078			
		s5	1	0.0004309			i
		s6	2	0.0008726			
スピー ハウシベミ Calibration verification	Cx22	Eound 0.5246 ng/ml	True 0.5 nalm		[049%R	104.9%2	
CCン ハンベベ Calibration verification	CKYX	0.5291 ng/ml			1058%.4	10787.7	1
Calibration verification							

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

LDC#: 33590810

VALIDATION FINDINGS WORKSHEET Level IV Recalculation Worksheet

Page: __of __ Reviewer: _____ 2nd Reviewer: ______

METHOD: Inorganics,	Method	See !	Corser

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

 $%R = Found \times 100$ True

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:

 $RPD = [S-D] \times 100$

Where,

S =

Original sample concentration

(S+D)/2

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 11'115	Laboratory control sample	Cxxx	1.10 ng/ml	1.00 mg/m/	110%.8	110%R	5
N	Matrix spike sample		(SSR-SR)				
DUQ 12:14	Duplicate sample	CXXX	0.0299ng/m³	0.030 ng/m3	3.29%,870	3.09%	yx.

Comments: _	* Rouding		 	 	 		
)					

LDC #: 33590840

VALIDATION FINDINGS WORKSHEET

Sample Calculation Verification

Page: _of _ Reviewer: ____ 2nd reviewer: _____

METHOD: Inorganics, Method See Cover	
Please see qualifications below for all questions answered "N". Not applicable question 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?	ons are identified as "N/A".
Compound (analyte) results for	_reported with a positive detect were
Concentration = $(A - C_0)(C_1)$ Recalculation: $(0.000852 - (-1))$ Recalculation: $(0.000852 - (-1))$ Recalculation: $(0.000852 - (-1))$	1.14 E-05)) +19 = 0.2186 mg/m
(=0.0000852 (hgh)(h) (0.2186 nghu) (10m) (0=-1.14E-05 (hgh)(h) = ngh) (0.2186 nghu) (10m)	1) = 0.101 mg/m³

	0.555 -[4](Reported Concentration	Calculated Concentration	Acceptable
#	Sample ID	Analyte	(ng/m³)	(va(m3)	(Y/N)
	\	Cx	0.0252	0.0252	7
	2		NO	<i>170</i>	4
	3		0.0308	0.0309	7*
	P		0.0254	0.0255	<i>Y*</i>
	S		0.0215	0.0210	Y*
	6		00	りり	7
	7		0.5568	0.0568	
	8		<i>NO</i>	マワ	
	٩		NO	NO	
	lo		1000.0	0-0661	
	11		0.0623	0.0623	
	12		211.0	0.115	
	13		0.101	10.0	
	14		0.105	0.105	<u> </u>
	15		0.09	0,0900	Y*
	ط۱		0.0978	0.0978 P\$	7
	17		OG	しか	
	18		NO	NO	7

)	-	 	· · · · · · · · · · · · · · · · · · ·	
Note:	* Ronding		_			



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

Description:

Comments:

ATTN: Mr. Jeff Boggs

Matrix:

PHONE: (443) 803-8495

FAX: (410) 266-8912

Air

OAM 1

Start Time 1/18/15 14:58

FILE #: 3926.00

REPORTED:

01/27/15 10:12

01/20/15 to 01/21/15

SUBMITTED: AQS SITE

SITE CODE:

m³

Honeywell Hex Chrome Study

Sampled: 01/19/15 14:44

Received: 01/20/15 11:32

Analysis Date: 01/22/15 13:26

Hexavalent Chromium by SOP ERG-MOR-063

21.39

5012023-10

Results

MDL

Analyte Hexavalent Chromium **CAS Number**

Lab ID:

Sample Volume:

ng/m³ Air

Flag

<u>ng/m³ Air</u>

1854-02-99

0.0252

0.0036

JAN 2 8 2015



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OAM 2 Air

Start Time 1/18/15 15:21

FILE #: 3926.00

REPORTED:

01/27/15 10:12

01/20/15 to 01/21/15

SUBMITTED:

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Sampled: 01/19/15 15:08

Received: 01/20/15 11:32

Analysis Date: 01/22/15 13:36

Hexavalent Chromium by SOP ERG-MOR-063

5012023-11

Results

<u>MDL</u>

<u>Analyte</u> Hexavalent Chromium

CAS Number 1854-02-99

ng/m³ Air ND

Lab ID:

Sample Volume:

21.39

Flag

ng/m³ Air 0.0036

JAN 2 8 2015



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Col 1 Start Time 1/18/15 16:21

FILE #: 3926.00

REPORTED:

01/27/15 10:12

01/20/15 to 01/21/15

SUBMITTED:

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

Matrix:

PAM-1

Lab ID:

5012023-12

21.34

Sampled: 01/19/15 16:04 Received: 01/20/15 11:32

Sample Volume:

m³

Analysis Date: 01/22/15 12:06

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

ng/m³ Air

<u>Flag</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0308

0.0036

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Air

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FILE #: 3926.00

REPORTED: 01/27/15 10:12

01/20/15 to 01/21/15

SUBMITTED: AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

PAM-1D

Lab ID:

Sample Volume:

5012023-13

m³

Sampled: 01/19/15 16:07 Received: 01/20/15 11:32

Analysis Date: 01/22/15 12:26

Matrix: Comments:

Col 2 Start Time 1/18/15 16:25

Hexavalent Chromium by SOP ERG-MOR-063

21.34

Results

<u>MDL</u>

Analyte

CAS Number

ng/m³ Air

<u>Flag</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0254

0.0036

JAN 28 2015



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FILE #: 3926.00

REPORTED:

01/27/15 10:12

SUBMITTED:

01/20/15 to 01/21/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

Matrix:

PAM-2

Air

Lab ID:

Sample Volume:

5012023-14

21.62

m³

Sampled: 01/19/15 15:53

Received: 01/20/15 11:32

Analysis Date: 01/22/15 14:05

Start Time 1/18/15 16:00 **Hexavalent Chromium by SOP ERG-MOR-063**

Results

MDL

Analyte

CAS Number

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0215

0.0036

JAN 2 8 2015



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FILE #: 3926.00

REPORTED:

01/27/15 10:12 01/20/15 to 01/21/15

SUBMITTED: AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

PAM-3

Lab ID:

5012023-15

Sampled: 01/19/15 15:35

Matrix:

Air

Start Time 1/18/15 15:50

Sample Volume:

21.38

Received: 01/20/15 11:32

Analysis Date: 01/22/15 14:15

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte Hexavalent Chromium

CAS Number 1854-02-99

ng/m³ Air ND

<u>Flag</u>

ng/m³ Air 0.0036

JAN 28 2015



Environmental Resources Management, Inc

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Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Air

Start Time 1/18/15 15:40

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

01/27/15 10:12

01/20/15 to 01/21/15

SUBMITTED:

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

Matrix:

PAM-4

Lab ID:

5012023-16

Sample Volume:

21.39

m³

Sampled: 01/19/15 15:26 Received: 01/20/15 11:32

Analysis Date: 01/22/15 14:25

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

ng/m³ Air

<u>Flaq</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0568

0.0036

JAN 2 8 2015



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

01/27/15 10:12 REPORTED:

Malvern, PA 19355

SUBMITTED:

01/20/15 to 01/21/15

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

PAM-21

FAX: (410) 266-8912

5012023-17 Lab ID:

Sampled: 01/19/15 00:00

Matrix:

Air

Sample Volume:

21.62 m³ Received: 01/20/15 11:32

Analysis Date: 01/22/15 14:35

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL.

Analyte Hexavalent Chromium CAS Number 1854-02-99

ng/m3 Air ND

Flag

ng/m³ Air 0.0036

JAN 2 8 2015



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FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/27/15 10:12

01/20/15 to 01/21/15

SUBMITTED: AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

PAM-31

Lab ID:

5012023-18

m³

Sampled: 01/19/15 00:00

Matrix:

Air

Sample Volume:

21.38

Received: 01/20/15 11:32 Analysis Date: 01/22/15 14:45

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

<u>Analyte</u> Hexavalent Chromium **CAS Number** 1854-02-99

ng/m³ Air ND

Flag

ng/m³ Air 0.0036

JAN 2 8 2015

Initials: CR

Eastern Research Group

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

Page 11 of 22



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Malvern, PA 19355

Description:

Comments:

ATTN: Mr. Jeff Boggs

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Matrix:

FAX: (410) 266-8912

OAM 1

Start Time 1/19/15 14:47

FILE #: 3926.00

REPORTED: SUBMITTED: 01/27/15 10:12

01/20/15 to 01/21/15

AQS SITE

SODE:

m³

Honeywell Hex Chrome Study

Sampled: 01/20/15 14:57

Received: 01/21/15 10:46

Analysis Date: 01/22/15 14:55

Hexavalent Chromium by SOP ERG-MOR-063

21.75

5012118-01

Results

MDL

CAS Number

ng/m³ Air

<u>Flaq</u>

<u>ng/m³ Air</u>

Hexavalent Chromium

Analyte

1854-02-99

Lab ID:

Sample Volume:

0.0661

0.0036

JAN 2 8 2015



Environmental Resources Management, Inc

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Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Air

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

01/27/15 10:12

01/20/15 to 01/21/15

SUBMITTED:

AQS SITE SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

Matrix:

OAM 2

Start Time 1/19/15 15:10

Lab ID:

Sample Volume:

5012118-02

21.78 m³ Sampled: 01/20/15 15:22 Received: 01/21/15 10:46

Analysis Date: 01/22/15 15:05

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

<u>Analyte</u>

CAS Number

ng/m³ Air

<u>Flag</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0623

0.0036

JAN 2 8 2015



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

Description:

Comments:

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Matrix:

Air

PAM-1

Col 1 Start Time 1/19/15 16:07

FAX: (410) 266-8912

Lab ID:

Sample Volume:

5012118-03

21.58

m³

FILE #: 3926.00

REPORTED:

SUBMITTED:

AQS SITE SITE CODE:

Honeywell Hex Chrome Study

Sampled: 01/20/15 16:06

Received: 01/21/15 10:46 Analysis Date: 01/22/15 12:45

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

01/27/15 10:12

01/20/15 to 01/21/15

Analyte Hexavalent Chromium **CAS Number** 1854-02-99

ng/m³ Air 0.115

<u>Flag</u>

ng/m³ Air

0.0036

JAN 2 8 2015



Environmental Resources Management, Inc

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Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/27/15 10:12

SUBMITTED:

01/20/15 to 01/21/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

Matrix:

PAM-1D

Lab ID:

Sample Volume:

5012118-04

m³

Sampled: 01/20/15 16:09

Received: 01/21/15 10:46 Analysis Date: 01/22/15 13:05

Comments:

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

Hexavalent Chromium by SOP ERG-MOR-063

21.59

<u>Results</u>

<u>MDL</u>

<u>Analyte</u>

CAS Number

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.101

0.0036

JAN 2 8 2015



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

01/27/15 10:12

SUBMITTED:

01/20/15 to 01/21/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

PAM-2

Lab ID:

5012118-05

m³

Sampled: 01/20/15 15:56 Received: 01/21/15 10:46

Matrix: Air

Start Time 1/19/15 15:56

Sample Volume:

21.6

Analysis Date: 01/22/15 15:15

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

<u>Analyte</u>

CAS Number

ng/m³ Air

<u>Flag</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.105

0.0036

JAN 2 8 2015



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

Description:

Comments:

ATTN: Mr. Jeff Boggs

Matrix:

PHONE: (443) 803-8495

PAM-3

Air

Start Time 1/19/15 15:38

FAX: (410) 266-8912

Lab ID:

Sample Volume:

5012118-06

21.76

m³

FILE #: 3926.00

REPORTED:

SUBMITTED:

AQS SITE SITE CODE:

Honeywell Hex Chrome Study

Sampled: 01/20/15 15:49

Received: 01/21/15 10:46

Analysis Date: 01/22/15 15:25

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

01/27/15 10:12

01/20/15 to 01/21/15

Analyte Hexavalent Chromium **CAS Number**

ng/m³ Air

<u>Flag</u>

ng/m³ Air

1854-02-99 0.0909 0.0036

JAN 2 8 2015



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Air

Start Time 1/19/15 15:29

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 01/27/15 10:12 SUBMITTED:

01/20/15 to 01/21/15

AQS SITE

SITE CODE:

 m^3

Honeywell Hex Chrome Study

Description:

Comments:

Matrix:

PAM-4

Lab ID:

Sample Volume:

5012118-07

21.83

Sampled: 01/20/15 15:44 Received: 01/21/15 10:46

Analysis Date: 01/22/15 15:35

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

<u>ng/m³ Air</u>

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0978

0.0036

JAN 2 8 2015



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

Description:

Comments:

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Matrix:

FAX: (410) 266-8912

PAM-21

Air

Lab ID:

Sample Volume:

5012118-08

21.6

m³

SUBMITTED:

AQS SITE SITE CODE:

FILE #: 3926.00

REPORTED: 01/27/15 10:12

Honeywell Hex Chrome Study

Sampled: 01/20/15 00:00

Received: 01/21/15 10:46 Analysis Date: 01/22/15 16:04

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

01/20/15 to 01/21/15

Hexavalent Chromium

Analyte

CAS Number 1854-02-99

ng/m³ Air ND

<u>Flag</u>

ng/m³ Air 0.0036

JAN 2 8 2015

Initials: CR

Eastern Research Group

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

Page 19 of 22



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

Description:

Comments:

Matrix:

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

PAM-31

Air

FAX: (410) 266-8912

Lab ID:

5012118-09

Sample Volume:

21.76

m³

SUBMITTED:

AQS SITE

SHECODE:

FILE #: 3926.00

REPORTED: 01/27/15 10:12

Honeywell Hex Chrome Study

Sampled: 01/20/15 00:00

Received: 01/21/15 10:46 Analysis Date: 01/22/15 16:14

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

01/20/15 to 01/21/15

Analyte Hexavalent Chromium **CAS Number** 1854-02-99

ng/m³ Air ND

<u>Flag</u>

ng/m³ Air 0.0036

JAN 2 8 2015



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

ERM

February 2, 2015

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

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

Dear Mr. Boggs,

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

LDC Project #33618:

SDG

Fraction

5012218/5012306

Hexavalent Chromium

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

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

Sincerely,

Christina Rink

Project Manager/Chemist

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

Project/Site Name:

Harbor Point, MD, Hexavalent Chromium Monitoring

Collection Date:

January 21 through January 22, 2015

LDC Report Date:

February 2, 2015

Matrix:

Air

Parameters:

Hexavalent Chromium

Validation Level:

EPA Level IV

Laboratory:

Eastern Research Group

Sample Delivery Group (SDG): 5012218/5012306

Sample Identification

OAM 1 (01/21/15)

PAM-1 (01/22/15)DUP

OAM 2 (01/21/15)

PAM-1D (01/22/15)DUP

PAM-1 (01/21/15)

PAM-1D (01/21/15)

PAM-2 (01/21/15)

PAM-3 (01/21/15)

PAM-4 (01/21/15)

PAM-21 (01/21/15)

PAM-31 (01/21/15)

OAM 1 (01/22/15) OAM 2 (01/22/15)

PAM-1 (01/22/15)

PAM-1D (01/22/15)

PAM-2 (01/22/15)

PAM-3 (01/22/15)

PAM-4 (01/22/15)

PAM-21 (01/22/15)

PAM-31 (01/22/15)

PAM-1 (01/21/15)DUP

PAM-1D (01/21/15)DUP

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

Introduction

This data review covers 22 air samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per ASTM D7614 for Hexavalent Chromium.

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

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

The following are definitions of the data qualifiers:

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

I. Technical Holding Times

All technical holding time requirements were met.

II. Initial Calibration

All criteria for the initial calibration were met.

III. Continuing Calibration

Continuing calibration frequency and analysis criteria were met.

IV. Blanks

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

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

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

V. Matrix Spike/Matrix Spike Duplicates

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

VI. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

VII. Laboratory Control Samples

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

VIII. Sample Result Verification

All sample result verifications were acceptable.

IX. Overall Assessment of Data

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

X. Field Duplicates

Samples PAM-1(1/21/15) and PAM-1D (1/21/15) and samples PAM-1(1/22/15) and PAM-1D (1/22/15) were identified as field duplicates. No hexavalent chromium was detected in any of the samples with the following exceptions:

	Concentrat	ion_(ng/m³)			
Analyte	PAM-1(1/21/15)	PAM-1D (1/21/15)	RPD (Limits)	Flags	A or P
Hexavalent chromium	0.0493	0.0478	3 (≤20)	-	-

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

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

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

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

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

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

LDC #:_ 33618A6

VALIDATION COMPLETENESS WORKSHEET

Level IV

SDG #: 5012218/5012306 Laboratory: Eastern Research Group

Page: Reviewer: 2nd Reviewer: //

METHOD: (Analyte) Hexavalent Chromium (ASTM D7614)

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

	Validation Area		Comments
l.	Sample receipt/Technical holding times	A	H22-23/1502 1/21-1/22/15
	Initial calibration	A	
111.	Calibration verification	A	
IV	Laboratory Blanks	A	
V	Field blanks	100	FB=(8)(n) TB=(9)(18)
VI.	Matrix Spike/Matrix Spike Duplicates	<i>N</i>	Not Repited
VII.	Duplicate sample analysis	A	DUR
VIII.	Laboratory control samples	A	Lesio
IX.	Field duplicates	SW	FD=(3,4) (12,13)
X.	Sample result verification	A	
_للا	Overall assessment of data	LA	

Note:

A = Acceptable

N = Not provided/applicable SW = See worksheet

ND = No compounds detected

R = Rinsate FB = Field blank D = Duplicate

TB = Trip blank
EB = Equipment blank

SB=Source blank OTHER:

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

LDC #: 33618A6

SDG #: _5012218/5012306

Laboratory: Eastern Research Group

VALIDATION COMPLETENESS WORKSHEET

Level IV

Page: 2 of 2 Reviewer: 55

2nd Reviewer:

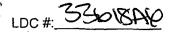
METHOD: (Analyte) Hexavalent Chromium (ASTM D7614)

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

VALIDATION FINDINGS CHECKLIST

Page: __of _
Reviewer: ____
2nd Reviewer: ____

Method:Inorganics (EPA Method See Laver)				
Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	/			
Cooler temperature criteria was met.	/			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	/			
Were the proper number of standards used?	/			
Were all initial calibration correlation coefficients ≥ 0.995?	/			
Were all initial and continuing calibration verification %Rs within the 90 110% QC limits?	/			
Were titrant checks performed as required? (Level IV only)				
Were balance checks performed as required? (Level IV only)				
III. Blanks				
Was a method blank associated with every sample in this SDG?	/			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		/		
IV. Matrix spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	/			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	P		/	70
Were the MS/MSD or duplicate relative percent differences (RPD) \leq 20% for waters and \leq 35% for soil samples? A control limit of \leq CRDL(\leq 2X CRDL for soil) was used for samples that were \leq 5X the CRDL, including when only one of the duplicate sample values were \leq 5X the CRDL.	/			
V. Laboratory control samples				
Was an LCS anayized for this SDG?				
Was an LCS analyzed per extraction batch?				
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	/			
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?				
Were the performance evaluation (PE) samples within the acceptance limits?				



VALIDATION FINDINGS CHECKLIST

Page: Zof Z Reviewer: ZO 2nd Reviewer: A

Validation Area	Yes	No	NA	Findings/Comments
VII. Sample Result Verification				J
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.	1			
Target analytes were detected in the field duplicates.	1			
X. Field blanks				
Field blanks were identified in this SDG.				
Target analytes were detected in the field blanks.		,		

LDC#<u>33618A6</u>

VALIDATION FINDINGS WORKSHEET

Field Duplicates

Page: _	<u> </u>
Reviewer:	30
2nd Reviewer:_	a

Inorganics: Method See Cover

	Concentrati			
Analyte	3	4	RPD (≤20)	Qual.
Hexavalent Chromium	0.0493	0.0478	3	

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

LDC #: 33018A6

Validation Findings Worksheet Initial and Continuing Calibration Calculation Verification

Page:_	1	of_	
Reviewe	r:	3	\mathcal{Q}
2nd Revie	ewe	er:	2
•			

Method: Inorganics, Method	
The correlation coefficient (r) for the ca	alibration of Crywas recalculated.Calibration date: 1 27 15

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

%R = <u>Found X 100</u>

Where,

Found = concentration of each analyte <u>measured</u> in the analysis of the ICV or CCV solution

True = True =

True = concentration of each analyte in the ICV or CCV source

					Recalculated	Reported	Acceptable
Type of analysis	Analyte	Standard	Conc. (ng/ml)	Area	r or r ²	r or r ²	(Y/N)
Initial calibration		s1	0.05	0.000013			
		s2	0.1	0.0000334	0.99995	0.99995	
		s3	0.2	0.0000778	<u> </u>		4
	Cxxx	s4	0.5	0.0002057			
		s5	1	0.0004058	<u> </u>		t
		s6	2	0.0008311			
JW 11:08	Carp	Faud	The			1-2-1-8-	
Calibration verification		0.519 ugh)	O.Snalm1		1051118	102.4 %R	
Cou \Z:07 Calibration verification	Cc+b	0.5374 vym)	a. Snglul		107.5%R	107.5%	
		<u> </u>					
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#: 3368A6

VALIDATION FINDINGS WORKSHEET Level IV Recalculation Worksheet

	Page:_	<u>l_of_l</u>
1	Reviewer:_	00
2nd l	Reviewer:_	<u></u>

		/4	\frown
METHOD: Inorganics, I	Method	_>ee_	Cover

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

 $%R = Found \times 100$ True

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:

 $RPD = [S-D] \times 100$

Where,

S=

Original sample concentration

(S+D)/2

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)
LLS 11:37	Laboratory control sample	Cx*>	1.0-8 rg/m1	1.00mg/m)	108%2	108%.P	7
N	Matrix spike sample		(SSR-SR)			·	
DUP 12:38	Duplicate sample	Crass	0.0502 ng/m³	0.0493mg/m ³	1.81 % RRT	180%280	7

Comments:	 		 	
	 	· · · · · · · · · · · · · · · · · · ·	 	

LDC#: 3368A6

VALIDATION FINDINGS WORKSHEET

Sample Calculation Verification

7	_of_	<u> </u>
	25	<u>></u>
	<u>\</u>	_of_

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? Are all detection limits below the CRQL?	,
Compound (analyte) results for	detect were
Concentration = $(A - C_0) C_1$ Recalculation: $(A - (-7.36E - 0.6)) 0.004184$	1490.0=
Compound (analyte) results for	0430). 063 1m
C1=0.0004184 W3:21.89	JD -

		DES (Ower) 1.			
. #	Sample ID	Analyte	Reported Concentration (m/w²)	Calculated Concentration (\(\(\(\(\(\) \) \)	Acceptable (Y/N)
	\	Cx+16	170	128	3
	2	·	0.0743	0.0743	
	3		0.0493	0.0493	
	4		0.0478	80,0478	
	2		0.0631	0.0631	
	6		0.0430	0.0430	7
	7		0.0495	0.0494	74
	8		<i>P0</i>	120	4
	9	·	69	100	
	10		00	120	
	11		NO	100	
	12		NO	100	
	13		OU	100	
	14		ND	20	
	12		ND	NO	Y
	16		0.0342	0.343	46
			NO	ND	7
	18	4	NO	70	رل.
					7

Note:	



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Matrix:

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

01/29/15 15:38

SUBMITTED:

01/22/15 to 01/23/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

OAM 1

Start Time 1/20/15 15:01

Lab ID:

Sample Volume:

5012218-01

m³

Sampled: 01/21/15 14:53 Received: 01/22/15 10:52

Analysis Date: 01/27/15 14:27

Hexavalent Chromium by SOP ERG-MOR-063

21.48

Results

MDL

Analyte

CAS Number

ng/m³ Air

Flag

na/m³ Air

Hexavalent Chromium

1854-02-99

ND

0.0036

JAN 3 0 2015



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

01/29/15 15:38

SUBMITTED:

01/22/15 to 01/23/15

AQS SITE SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

Matrix:

OAM 2

Start Time 1/20/15 15:26

Lab ID:

Sample Volume:

5012218-02

21.59

m³

Sampled: 01/21/15 15:25 Received: 01/22/15 10:52

Analysis Date: 01/27/15 14:37

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte Hexavalent Chromium **CAS Number**

ng/m³ Air

Flaq

ng/m³ Air

1854-02-99

0.0743

0.0036

JAN 3 0 2015

Initials: CR

Eastern Research Group

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

Page 4 of 22



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

Description:

Comments:

Hexavalent Chromium

Analyte

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Matrix:

FAX: (410) 266-8912

PAM-1

Air

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

CAS Number 1854-02-99

ng/m³ Air

Lab ID:

Sample Volume:

0.0493

FILE #: 3926.00

REPORTED: 01/29/15 15:38

SUBMITTED:

01/22/15 to 01/23/15

AQS SITE

SUE CODE:

<u>Flaq</u>

m³

Honeywell Hex Chrome Study

Sampled: 01/21/15 16:59

Received: 01/22/15 10:52 Analysis Date: 01/27/15 12:28

Hexavalent Chromium by SOP ERG-MOR-063

22.35

Results

5012218-03

<u>MDL</u>

ng/m³ Air

0.0036

JAN 3 0 2015

Initials: CR

Eastern Research Group

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

Page 5 of 22



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Air

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

01/29/15 15:38

SUBMITTED:

01/22/15 to 01/23/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

PAM-1D

Lab ID:

Sample Volume:

5012218-04

22.49

m³

Sampled: 01/21/15 17:11 Received: 01/22/15 10:52

Analysis Date: 01/27/15 13:57

Comments:

Matrix:

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

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

Hexavalent Chromium

CAS Number

na/m³ Air

Flag

ng/m³ Air

1854-02-99

0.0478

0.0036

JAN 3 0 2015

Initials: CR

Eastern Research Group

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

Page 6 of 22



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

Matrix:

PHONE: (443) 803-8495

Start Time 1/20/15 15:59

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

01/29/15 15:38

SUBMITTED:

01/22/15 to 01/23/15

AQS SITE

SHE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

PAM-2

Air

Lab ID:

Sample Volume:

5012218-05

22.07

m³

Sampled: 01/21/15 16:30 Received: 01/22/15 10:52

Analysis Date: 01/27/15 14:47

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL.

Analyte

CAS Number

ng/m³ Air

<u>Flag</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0631

0.0036

JAN 3 0 2015

Initials: CR

Eastern Research Group

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

Page 7 of 22



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Matrix:

Start Time 1/20/15 15:51

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

01/29/15 15:38

01/22/15 to 01/23/15

SUBMITTED:

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

Hexavalent Chromium

PAM-3

Air

Lab ID:

Sample Volume:

5012218-06

21.89

m³

Sampled: 01/21/15 16:11 Received: 01/22/15 10:52

Analysis Date: 01/27/15 17:17

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

ng/m³ Air

Flag

<u>ng/m³ Air</u>

1854-02-99

0.0430

0.0036

JAN 3 0 2015

Initials: CR

Eastern Research Group

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

Page 8 of 22



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED:

01/29/15 15:38

Malvern, PA 19355

SUBMITTED:

01/22/15 to 01/23/15

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

FAX: (410) 266-8912

SHE CODE:

Honeywell Hex Chrome Study

Description:

PAM-4

Lab ID:

Sample Volume:

5012218-07

m³

Sampled: 01/21/15 15:52 Received: 01/22/15 10:52

Matrix: Comments:

Start Time 1/20/15 15:46

21.69

Analysis Date: 01/27/15 15:07

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

na/m3 Air

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0495

0.0036

JAN 3 0 2015

Initials: CR



Environmental Resources Management, inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

Matrix:

PHONE: (443) 803-8495

Air

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

01/29/15 15:38

SUBMITTED:

01/22/15 to 01/23/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

PAM-21

Lab ID:

Sample Volume:

5012218-08

22.07

m³

Sampled: 01/21/15 00:00 Received: 01/22/15 10:52

Analysis Date: 01/27/15 15:17

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte Hexavalent Chromium **CAS Number**

ng/m³ Air

Flag

ng/m³ Air

1854-02-99 ND 0.0036

JAN 3 0 2015

Initials: CR

Eastern Research Group

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

Page 10 of 22



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

Matrix:

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

01/29/15 15:38

SUBMITTED:

m³

01/22/15 to 01/23/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Analysis Date: 01/27/15 15:27

Description:

PAM-31

Air

Lab ID:

Sample Volume:

5012218-09

21.89

Sampled: 01/21/15 00:00 Received: 01/22/15 10:52

Comments:

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

ND

0.0036

JAN 3 0 2015

Initials: CR

Eastern Research Group

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

Page 11 of 22



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED:

01/29/15 15:38

Malvern, PA 19355

SUBMITTED:

01/22/15 to 01/23/15

ATTN: Mr. Jeff Boggs

AQS SITE SHECODE:

PHONE: (443) 803-8495

FAX: (410) 266-8912

Honeywell Hex Chrome Study

Description:

OAM 1

Air

Lab ID:

Sample Volume:

5012306-01

m³

Sampled: 01/22/15 15:14 Received: 01/23/15 10:42

Matrix: Comments:

Start Time 1/21/15 15:02

23.63

Analysis Date: 01/27/15 15:37

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

<u>Analyte</u>

CAS Number

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

ND

0.0033

JAN 3 0 2015

Initials: CR



Environmental Resources Management, Inc.

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 01/29/15 15:38

Malvern, PA 19355

SUBMITTED:

01/22/15 to 01/23/15

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

FAX: (410) 266-8912

SHE CODE:

Honeywell Hex Chrome Study

Description:

OAM 2

Lab ID: 5012306-02

Sampled: 01/22/15 15:53

Matrix:

Air

Sample Volume:

21.94

m³

Received: 01/23/15 10:42 Analysis Date: 01/27/15 15:46

Comments: Start Time 1/21/15 15:30

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

<u>Analyte</u>

CAS Number

ng/m³ Air

Flag

ng/m3 Air

Hexavalent Chromium

1854-02-99

ND

0.0036

JAN 3 0 2015

Initials: CR



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 01/29/15 15:38

Malvern, PA 19355

01/22/15 to 01/23/15

ATTN: Mr. Jeff Boggs

AQS SITE

SUBMITTED:

m³

PHONE: (443) 803-8495

FAX: (410) 266-8912

SITE CODE:

Honeywell Hex Chrome Study

Description:

PAM-1

Lab ID:

5012306-03

Sampled: 01/22/15 17:58

Matrix:

Air

Sample Volume:

22.34

Received: 01/23/15 10:42 Analysis Date: 01/27/15 13:07

Comments:

Col 1 Start Time 1/21/15 17:08

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

Analyte

CAS Number

ng/m³ Air

<u>Flaq</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0036

JAN 3 0 2015

Initials: CR

Eastern Research Group

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

Page 14 of 22



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Air

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

01/29/15 15:38

SUBMITTED:

01/22/15 to 01/23/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

PAM-1D

Lab ID:

Sample Volume:

5012306-04

m³

Sampled: 01/22/15 18:08

Received: 01/23/15 10:42 Analysis Date: 01/27/15 13:27

Matrix: Comments:

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

Hexavalent Chromium by SOP ERG-MOR-063

22.39

Results

MDL

Analyte

CAS Number

ng/m³ Air

<u>Flaq</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

ND

0.0036

JAN 3 0 2015

Initials: CR



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

01/29/15 15:38 REPORTED:

Malvern, PA 19355

SUBMITTED:

01/22/15 to 01/23/15

AQS SITE

ATTN: Mr. Jeff Boggs PHONE: (443) 803-8495

SITE CODE:

Honeywell Hex Chrome Study

Description:

PAM-2

Lab ID:

5012306-05

Sampled: 01/22/15 17:19

Matrix:

Air

Sample Volume:

m³

Received: 01/23/15 10:42 Analysis Date: 01/27/15 15:56

Comments:

Start Time 1/21/15 16:36

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

Analyte

CAS Number

ng/m³ Air

<u>Flag</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

FAX: (410) 266-8912

ND

0.0036

JAN 3 0 2015

Initials: CR

Eastern Research Group

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

Page 16 of 22



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

Comments:

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

01/29/15 15:38

SUBMITTED:

01/22/15 to 01/23/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description: Matrix:

PAM-3

Start Time 1/21/15 16:22

Air

Lab ID:

Sample Volume:

5012306-06

22.08

m³

Sampled: 01/22/15 16:54 Received: 01/23/15 10:42

Analysis Date: 01/27/15 16:26

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

<u>Analyte</u>

CAS Number

ng/m³ Air

ng/m³ Air

Hexavalent Chromium

1854-02-99

Flag

0.0036

JAN 30 2015

Initials: CR

Eastern Research Group

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

Page 17 of 22



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

Description:

Comments:

Matrix:

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

PAM-4

Air

Start Time 1/21/15 15:57

FAX: (410) 266-8912

Lab ID:

Sample Volume:

5012306-07

22.14

FILE #: 3926.00

REPORTED:

SUBMITTED: AQS SITE

SHECODE:

mз

Honeywell Hex Chrome Study

Sampled: 01/22/15 16:33

Received: 01/23/15 10:42

Analysis Date: 01/27/15 16:36

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

01/29/15 15:38

01/22/15 to 01/23/15

Analyte Hexavalent Chromium CAS Number

ng/m³ Air

Flag

ng/m³ Air

1854-02-99 0.0342 0.0036

JAN 3 0 2015

Initials: CR

Eastern Research Group

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



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

Description:

Comments:

Matrix:

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Air

PAM-21

FAX: (410) 266-8912

Lab ID:

Sample Volume:

5012306-08

22.25

m³

FILE #: 3926.00

REPORTED:

SUBMITTED: AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Sampled: 01/22/15 00:00 Received: 01/23/15 10:42

Analysis Date: 01/27/15 16:46

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

01/29/15 15:38

01/22/15 to 01/23/15

Analyte Hexavalent Chromium **CAS Number** 1854-02-99

ng/m³ Air ND

Flag

ng/m³ Air 0.0036

JAN 3 0 2015

Initials: CR

Eastern Research Group

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



Environmental Resources Management, Inc

PAM-31

Air

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

Description:

Comments:

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Matrix:

FAX: (410) 266-8912

Lab ID:

5012306-09

Sample Volume:

22.08

m³

SUBMITTED:

AQS SITE SITE CODE:

FILE #: 3926.00

REPORTED: 01/29/15 15:38

Honeywell Hex Chrome Study

Sampled: 01/22/15 00:00

Received: 01/23/15 10:42 Analysis Date: 01/27/15 16:56

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

01/22/15 to 01/23/15

Analyte Hexavalent Chromium

CAS Number 1854-02-99

ng/m³ Air ND

Flag

ng/m³ Air 0.0036

JAN 3 0 2015

Initials: CR

Eastern Research Group

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



LABORATORY DATA CONSULTANTS, INC.

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

ERM

February 5, 2015

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

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

Dear Mr. Boggs,

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

LDC Project #33647:

SDG

Fraction

5012726/5012816

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.

Christina Rink

Sincerely,

Project Manager/Chemist

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Laboratory Data Consultants, Inc. Data Validation Report

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

Collection Date: January 23 through January 27, 2015

LDC Report Date: February 4, 2015

Matrix: Air

Parameters: Hexavalent Chromium

Validation Level: EPA Level IV

Laboratory: Eastern Research Group

Sample Delivery Group (SDG): 5012726/5012816

Sample Identification

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

Introduction

This data review covers 42 air samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per ASTM D7614 for Hexavalent Chromium.

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

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

The following are definitions of the data qualifiers:

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

I. Technical Holding Times

All technical holding time requirements were met.

II. Initial Calibration

All criteria for the initial calibration were met.

III. Continuing Calibration

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

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

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

IV. Blanks

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

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

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

V. Matrix Spike/Matrix Spike Duplicates

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

VI. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

VII. Laboratory Control Samples

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

VIII. Sample Result Verification

All sample result verifications were acceptable.

IX. Overall Assessment of Data

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

X. Field Duplicates

Samples PAM-1 (01/23/15) and PAM-1D (01/23/15), samples PAM-1 (01/24/15) and PAM-1D (01/24/15), PAM-1 (01/26/15) and PAM-1D (01/26/15), and samples PAM-1 (01/27/15) and PAM-1D (01/27/15) were identified as field duplicates. No hexavalent chromium was detected in any of the samples with the following exceptions:

	Concentrat	ion (ng/m³)	555			
Analyte	PAM-1 (01/23/15)	PAM-1D (01/23/15)	RPD (Limits)	Flags	A or P	
Hexavalent chromium	0.0214	0.0331	43 (≤20)	J (all detects)	Α	

	Concentrat	ion (ng/m³)				
Analyte	PAM-1 (01/24/15)	PAM-1D (01/24/15)	RPD (Limits)	Flags	A or P	
Hexavalent chromium	0.0461	0.0495	7 (≤20)	-	-	

	Concentrat	ion (ng/m³)	555		
Analyte	PAM-1 (01/26/15)	PAM-1D (01/26/15)	RPD (Limits)	Flags	A or P
Hexavalent chromium	0.0304	0.0333	9 (≤20)	-	-

	Concentrat	ion (ng/m³)			
Analyte	PAM-1 (01/27/15)	PAM-1D (01/27/15)	RPD (Limits)	Flags	A or P
Hexavalent chromium	0.0152	0.0036U	123 (≤20)	NQ	-

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

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

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

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

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

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

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

LDC #: 33647A6

SDG #: 5012726/5012816

VALIDATION COMPLETENESS WORKSHEET

Level IV

2nd Reviewer: OL

Laboratory: Eastern Research Group

METHOD: (Analyte) Hexavalent Chromium (ASTM D7614)

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

	Validation Area		Comments
1.	Sample receipt/Technical holding times	A	1/23-27/15
- 11	Initial calibration	A	
111.	Calibration verification	SW	
IV	Laboratory Blanks	A	
V	Field blanks	NO	FB=(7)(15)(24)(33), TB=(8)(10)(25)(34) Not Required
VI.	Matrix Spike/Matrix Spike Duplicates	2	Not Required
VII.	Duplicate sample analysis	A	
VIII.	Laboratory control samples	A	LISIO
IX.	Field duplicates	Sw	FD= (2,3)(11,12)(A,20) (28,29)
Х.	Sample result verification	A	, , ,
XI	Overall assessment of data	A	

Note:

A = Acceptable

N = Not provided/applicable

SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank

EB = Equipment blank

SB=Source blank OTHER:

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

LDC #: 33647A6

VALIDATION COMPLETENESS WORKSHEET

Level IV

Page: 1 of 2 Reviewer: 30 2nd Reviewer: _____

SDG #: 5012726/5012816 Laboratory: Eastern Research Group

METHOD: (Analyte) Hexavalent Chromium (ASTM D7614)

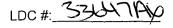
	Client ID	Lab ID	Matrix	Date
18	OAM 2 (01/26/15)	5012726-20	air	01/26/15
19	PAM-1 (01/26/15)	5012726-21	air	01/26/15
20	PAM-1D (01/26/15)	5012726-22	air	01/26/15
21	PAM-2 (01/26/15)	5012726-23	air	01/26/15
22	PAM-3 (01/26/15)	5012726-24	air	01/26/15
23	PAM-4 (01/26/15)	5012726-25	air	01/26/15
24	PAM-21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

Notes:_			

VALIDATION FINDINGS CHECKLIST

Page: of Reviewer: 2nd Reviewer:

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 9 8-110% QC limits?	A	/		3 D
Were titrant checks performed as required? (Level IV only)				
Were balance checks performed as required? (Level IV only)				
III. Blanks		,	,	
Was a method blank associated with every sample in this SDG?	/			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		/		
IV. Matrix spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	/			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.			/	
Were the MS/MSD or duplicate relative percent differences (RPD) \leq 20% for waters and \leq 35% for soil samples? A control limit of \leq CRDL(\leq 2X CRDL for soil) was used for samples that were \leq 5X the CRDL, including when only one of the duplicate sample values were \leq 5X the CRDL.	/			
V. Laboratory control samples				
Was an LCS 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 FINDINGS CHECKLIST

Page: 2 of 2 Reviewer: 30 2nd Reviewer: _____

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

LDC #: 33647A6

VALIDATION FINDINGS WORKSHEET <u>Calibration</u>

Page:_	<u>l</u> of \
Reviewer:	ZD
2nd Reviewer:	α

METHOD: Inorganics (See Cover)

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

Were all instruments calibrated daily, each set-up time, and were the proper number of standards used?

Were all initial and continuing calibration verification percent recoveries (%R) within the control limits of 90-110% for all analytes except mercury (80-120%)?

LEVEL IV ONLY:

Y N (V/A) Was a midrange cyanide standard distilled?

Y N N/A Are all correlation coefficients ≥0.995?

Were recalculated results acceptable? See Level IV Initial and Continuing Calibration Recalculation Worksheet for recalculations.

"	Date	Calibration ID	Analyte	%R	Associated Samples	Qualification of Data
	1/29/15	CCV (15:56)	Cr+6	116	17-18, 21-27, 30-34	Jdet/P (det = 17-18, 21-23)
-						
\vdash						
╠		<u> </u>				
				-		
H	- III V					
\vdash						
			 			

Comments:				

LDC# 33647A6

VALIDATION FINDINGS WORKSHEET

Field Duplicates

Page: _ of _ Reviewer: _ _ 2nd Reviewer: _

Inorganics: Method See Cover

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

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

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

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

NQ= 1 or both samples <5X MDL

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

LDC #: 33647A6

Validation Findings Worksheet Initial and Continuing Calibration Calculation Verification

Page:\	_ of <u>\</u>
Reviewer:	<u> </u>
2nd Review	rer:_G_

Method:	Inorganics,	Method	See Cover

The correlation coefficient (r) for the calibration of was recalculated. Calibration date: 01/28/15

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

%R = Found X 100

Where,

Found = concentration of each analyte <u>measured</u> in the analysis of the ICV or CCV solution

True

True = concentration of each analyte in the ICV or CCV source

					Recalculated	Reported	Acceptable
Type of analysis	Analyte	Standard	Conc. (ng/mL)	Area	r or r ²	r or r²	(Y/N)
Initial calibration		s1	0.05	0.0000154			
		s2	0.1	0.0000307	0.99997	0.99997	
		s3	0.2	0.0000719			·
	مهنج	s4	0.5	0.0001948			4
		s5	1	0.0003911		i	$\overline{}$
		s6	2	0.0007983			
JW 11:37	ماد کے	Found	True		1.00		
Calibration verification	CX	O StuBrain	10. Snapul		108.5%B	1085%8	
CW 12:37	طه ۱	3,5500			_	,	
Calibration verification	Crtb	0.5580 rg/m	0. Sve loul		111.6%P	- 111.6%R	4
Calibration verification							

Comments: Refer to Calibration Ver	ification findings worksheet for	list of qualifications and a	issociated samples when repe	orted results do not agree withi
10.0% of the recalculated results				

LDC#: 33647A6

VALIDATION FINDINGS WORKSHEET <u>Level IV Recalculation Worksheet</u>

Page:_	<u> </u>
Reviewer:	OE
2nd Reviewer:	9

		C^{i}	
METHOD: Inorganics,	Method	_5@_	COUST

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

 $%R = Found \times 100$ True

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:

 $RPD = |S-D| \times 100$

Where,

S =

Original sample concentration

(S+D)/2

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)
LLS 12:07	Laboratory control sample	Cxxx	1.115 ng/m)	1.00 mg/ml	112%	112%	7
2	Matrix spike sample		(SSR-SR)				
DUP 13:10	Duplicate sample	Caro	0.0225ng/m³	0.0214 m/m3	5.01%PD	S.27%	3)

Comments:			 	

LDC #: 33647 PM

VALIDATION FINDINGS WORKSHEET

Sample Calculation Verification

Page:_	1	_of_	<u> </u>
Reviewer:		3	`
2nd reviewer:		a	/

METHOD: Inorganics, Method
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A". Y N N/A
Compound (analyte) results forreported with a positive detect were recalculated and verified using the following equation:
Concentration = $A-6/C$ Recalculation: $(0.00069 - (-7.77E-6))$ Recalculation: $(0.00069 - (-7.77E-6))$
(0:-7.715-00 (ngim) (w) (0.0008 ngim) (10mi)
A = 0.0000000 m3 = noture = 0.0331 ng/m3

	2 2 0 0000000		20.10m		
#	Sample ID	Analyte	Reported Concentration () ()	Calculated Concentration (\a\sqrt{m}^3)	Acceptable (Y/N)
	Ĭ	Allalyte	0.0345	0-0314	Y*
	2		0.0214	450.0	<u>S</u>
	3		0.0331	0.0331	3
	4		0.0284	0.0283	y*
			0.0332	0.0332	3
	Ý		50400	0,401	3 3
	7		NO	00	3
	8		Ca	00	4
	9		1100-0	0.0612	4*
	<u>\</u> 0		0.123	0.123	3
	11		1040.0	0.0460	77
	12		0.0495	2P40.0	3
L	13		0.0437	0.0437	
	ly		0.0651	0.0651	
	12		00	100	
	16		00	<i>DG</i>	4
	17		0.0294	0.0293	77*
	18		0.0561	0.0561	5
	19		0.0304	0.0304	
	20	4	0.0333	0.0333	4

Note:	 	 		
·		 	 	

LDC #: 33/047A/0

VALIDATION FINDINGS WORKSHEET

Sample Calculation Verification

Page:	2_of
Reviewer:	
2nd reviewer [.]	Ća.

METHOD: Inorgar	cs, Method See Cover
Y N N/A Hay N N/A Ar Y N N/A Ar Compound (analytem)	ations below for all questions answered "N". Not applicable questions are identified as "N/A". We results been reported and calculated correctly? The results within the calibrated range of the instruments? The all detection limits below the CRQL? The reported with a positive detect were rified using the following equation:
Concentration =	Recalculation:

#	Sample ID	Analyte	Reported Concentration (প্রাশুর্	Calculated Concentration (いなしいぎ)	Acceptable (Y/N)
	21	Cr+6	0.0215	450.0	46
	21		0.0216	0.0217	Y*
	23		0.0434	0.0433	Y*
	24		200	70	3
	25		00	100	
	2 io		00	100	
	27		ND	60	
	28		0-0152	0.0152	·
	29		ND	NO	
	<u>3</u> い		<i>D</i>	ND EN	
	31		QU	NO	
	32		<i>6</i> 4	10	
	32 33		NO	100	
	34	<u></u>	\Box	NO	4

Note:	_				



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

1.0,000 0.0

Air

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

02/03/15 13:04

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

AQS SITE

CODE:

m³

Honeywell Hex Chrome Study

Description:

OAM 2

Lab ID:

Sample Volume:

5012726-02

1 42

Sampled: 01/23/15 15:52

Received: 01/27/15 15:17 **Analysis Date:** 01/28/15 14:59

Comments:

Matrix:

Start Time 1/22/15 16:04

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

<u>Analyte</u>

CAS Number

ng/m³ Air

<u>Flaq</u>

<u>ng/m³ Air</u>

Hexavalent Chromium

1854-02-99

0.0315

0.0036

FEB 0 5 2015

Initials: CR

Eastern Research Group

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

Page 4 of 39



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 02/03/15 13:04

Malvern, PA 19355

01/27/15 to 01/28/15

AQS SITE

SUBMITTED:

m³

ATTN: Mr. Jeff Boggs PHONE: (443) 803-8495

SITE CODE:

Honeywell Hex Chrome Study

Description:

PAM-1

Lab ID:

5012726-03

Sampled: 01/23/15 17:07

Analysis Date: 01/28/15 14:19

Matrix: Air

Sample Volume:

Received: 01/27/15 15:17

Comments:

Col 1 Start Time 1/22/15 18:06

FAX: (410) 266-8912

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

Analyte

CAS Number

ng/m³ Air

<u>Flaq</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0214

0.0036

FEB 0 5 2015

Initials: CR

Eastern Research Group

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Page 5 of 39



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

Description:
Matrix:

Comments:

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Air

PAM-1D

Col 2 Start Time 1/22/15 18:21

FAX: (410) 266-8912

8912

Lab ID:

Sample Volume:

5012726-04

20.76

m³

FILE #: 3926.00

REPORTED:

SUBMITTED:

AQS SITE

Honeywell Hex Chrome Study

Sampled: 01/23/15 17:21

Received: 01/27/15 15:17 **Analysis Date:** 01/28/15 17:58

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

02/03/15 13:04

01/27/15 to 01/28/15

CAS Number

ng/m³ Air

<u>Flag</u>

<u>ng/m³ Air</u>

Hexavalent Chromium

Analyte

1854-02-99

0.0331 5

0.0036

FEB 0 5 2015

· Control (Bridge Committee Committ

Initials: CR

Eastern Research Group

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Page 6 of 39



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Matrix:

Comments:

PAM-2 Description:

Air

Start Time 1/22/15 17:35

FAX: (410) 266-8912

Lab ID:

5012726-05

Sample Volume:

m³

FILE #: 3926.00

REPORTED:

SUBMITTED:

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Sampled: 01/23/15 16:35

Received: 01/27/15 15:17 Analysis Date: 01/28/15 17:18

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

02/03/15 13:04

01/27/15 to 01/28/15

CAS Number

<u>nq/m³ Air</u>

<u>Flaq</u>

ng/m³ Air

Hexavalent Chromium

<u>Analyte</u>

1854-02-99

0.0284

0.0036

FEB 0 5 2015

Initials: CR

Eastern Research Group



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

02/03/15 13:04 REPORTED:

SUBMITTED:

m³

01/27/15 to 01/28/15

Malvern, PA 19355

AQS SITE

ATTN: Mr. Jeff Boggs

SITE CODE:

PHONE: (443) 803-8495

Air

5012726-06

Honeywell Hex Chrome Study

Description:

PAM-3

Lab ID:

Sample Volume:

21.03

Hexavalent Chromium by SOP ERG-MOR-063

Sampled: 01/23/15 16:25 Received: 01/27/15 15:17

Analysis Date: 01/28/15 15:19

Matrix: Comments:

Start Time 1/22/15 17:03

Results

<u>MDL</u>

Analyte

CAS Number

FAX: (410) 266-8912

ng/m³ Air

<u>Flag</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0332

0.0036

FEB 0 5 2015

Initials: CZ

Eastern Research Group

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

Page 8 of 39



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

Description:

Comments:

Hexavalent Chromium

Analyte

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Matrix:

PAM-4

Air

FAX: (410) 266-8912

Lab ID:

5012726-07

Sample Volume:

m³

FILE #: 3926.00

REPORTED:

SUBMITTED: **AQS SITE**

SITE CODE:

Honeywell Hex Chrome Study

Sampled: 01/23/15 16:15

Received: 01/27/15 15:17 Analysis Date: 01/28/15 17:48

Hexavalent Chromium by SOP ERG-MOR-063

21.22

<u>Results</u> ng/m³ Air MDL

02/03/15 13:04

01/27/15 to 01/28/15

CAS Number

Start Time 1/22/15 16:41

1854-02-99

0.0402 5

<u>Flag</u>

ng/m³ Air

0.0036

FEB 0 5 2015

Initials: CR

Eastern Research Group



Environmental Resources Management, Inc.

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 02/03/15 13:04

Malvern, PA 19355

SUBMITTED:

01/27/15 to 01/28/15

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

CODE: SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

PAM-21

Lab ID: 5012726-08

m³

Sampled: 01/23/15 00:00 **Received:** 01/27/15 15:17

Matrix: Ai

Air

Sample Volume:

20.7

Δ

Analysis Date: 01/28/15 15:38

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

<u>Analyte</u>

CAS Number

<u>ng/m³ Air</u>

<u>Flaq</u>

ng/m³ Air 0.0036

Hexavalent Chromium 1854-02-99 ND U

FAX: (410) 266-8912

FEB 0 5 2015

Initials: CR

Eastern Research Group

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

Page 10 of 39



Environmental Resources Management, Inc.

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 02/03/15 13:04

Malvern, PA 19355

SUBMITTED:

01/27/15 to 01/28/15

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

FAX: (410) 266-8912

SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

PAM-31

Lab ID:

5012726-09

Sampled: 01/23/15 00:00

Matrix:

Air

Sample Volume:

m³

Received: 01/27/15 15:17

Analysis Date: 01/28/15 15:48

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

ng/m³ Air

<u>Flag</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

ND

0.0036

FEB 0 5 2015

Initials: CR

Eastern Research Group

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

Page 11 of 39



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

Matrix:

Comments:

Hexavalent Chromium

Analyte

PHONE: (443) 803-8495 **Description:**

Air

OAM 1

Start Time 1/23/15 15:35

FAX: (410) 266-8912

5012726-10

Sample Volume:

m³

FILE #: 3926.00

SUBMITTED:

AQS SITE

SITE CODE:

REPORTED: 02/03/15 13:04

Sampled: 01/24/15 14:55 Received: 01/27/15 15:17

Analysis Date: 01/28/15 15:58

Honeywell Hex Chrome Study

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

01/27/15 to 01/28/15

CAS Number 1854-02-99

Lab ID:

ng/m³ Air

0.0611

<u>Flag</u>

ng/m³ Air

0.0036

FEB 0 5 2015

Initials: CR

Eastern Research Group



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 02/03/15 13:04

Malvern, PA 19355

SUBMITTED:

01/27/15 to 01/28/15

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

SUPECODE:

Hexavalent Chromium by SOP ERG-MOR-063

Honeywell Hex Chrome Study

Description:

OAM 2

FAX: (410) 266-8912

Lab ID: 5012726-11

21.07

Sampled: 01/24/15 15:21

Matrix:

Air

Sample Volume:

m³

Received: 01/27/15 15:17

Comments: Start Time 1/23/15 15:56 Analysis Date: 01/28/15 16:08

Results

MDL

Analyte

CAS Number

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.123

0.0036

FEB 0 5 2015

Initials: CR

Eastern Research Group



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED:

02/03/15 13:04

Malvern, PA 19355

SUBMITTED:

01/27/15 to 01/28/15

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

FAX: (410) 266-8912

CODE:

m³

Honeywell Hex Chrome Study

Description:

PAM-1

Lab ID: 5012726-12 Sampled: 01/24/15 16:19

Matrix:

Air

Sample Volume:

Received: 01/27/15 15:17

Analysis Date: 01/28/15 13:39

Comments:

Col 1 Start Time 1/23/15 17:10

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0461

0.0036

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Initials: CR

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Page 14 of 39



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

Description: Matrix:

Comments:

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

PAM-1D

Air

Col 2 Start Time 1/23/15 17:22

FAX: (410) 266-8912

Lab ID:

Sample Volume:

5012726-13

20.71

m³

SUBMITTED:

AQS SITE SITE CODE:

FILE #: 3926.00

REPORTED: 02/03/15 13:04

Honeywell Hex Chrome Study

Sampled: 01/24/15 16:23

Received: 01/27/15 15:17 Analysis Date: 01/28/15 13:59

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

01/27/15 to 01/28/15

Analyte

CAS Number

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0495

0.0036

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Initials: CR

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

Page 15 of 39



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 02/03/15 13:04

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SUBMITTED:

01/27/15 to 01/28/15

ATTN: Mr. Jeff Boggs

Malvern, PA 19355

AQS SITE

PHONE: (443) 803-8495

CODE:

Honeywell Hex Chrome Study

Description:

Comments:

PAM-3

Start Time 1/23/15 16:27

Lab ID: 5012726-15

26-15

Sampled: 01/24/15 15:52

Matrix: A

Air

Sample Volume:

21.08 m³

Received: 01/27/15 15:17

Analysis Date: 01/28/15 17:37

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

<u>Analyte</u>

CAS Number

FAX: (410) 266-8912

<u>ng/m³ Air</u>

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0437

0.0036

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Page 16 of 39



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 02/03/15 13:04

Malvern, PA 19355

SUBMITTED:

01/27/15 to 01/28/15

ATTN: Mr. Jeff Boggs

AQS SITE

Flag

PHONE: (443) 803-8495

SITE CODE:

Hexavalent Chromium by SOP ERG-MOR-063

Honeywell Hex Chrome Study

Description:

PAM-4

Lab ID: 5012726-16 Sampled: 01/24/15 15:43

Matrix: Air Sample Volume:

21.08 m³

Received: 01/27/15 15:17 Analysis Date: 01/28/15 16:28

Comments:

Start Time 1/23/15 16:19

CAS Number

FAX: (410) 266-8912

Results ng/m³ Air <u>MDL</u>

0.0651

ng/m3 Air

Hexavalent Chromium

Analyte

1854-02-99

0.0036

FEB 0 5 2015

Initials: CR

Eastern Research Group



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 02/03/15 13:04

Malvern, PA 19355

SUBMITTED:

m³

01/27/15 to 01/28/15

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

SITE CODE:

Honeywell Hex Chrome Study

Description:

PAM-21

Lab ID:

5012726-17

Sampled: 01/24/15 00:00

Matrix:

Air

Sample Volume:

21.08

Received: 01/27/15 15:17

Comments:

Analysis Date: 01/28/15 16:58

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

<u>Analyte</u>

CAS Number

FAX: (410) 266-8912

ng/m³ Air

<u>Flaq</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0036

FEB 0 5 2015

Initials: CR

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Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

SUBMITTED:

REPORTED: 02/03/15 13:04

01/27/15 to 01/28/15

Malvern, PA 19355

AQS SITE

ATTN: Mr. Jeff Boggs PHONE: (443) 803-8495

SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

PAM-31

Lab ID:

5012726-18

Sampled: 01/24/15 00:00

Matrix:

Air

Sample Volume:

21.08

m³

Received: 01/27/15 15:17

Analysis Date: 01/28/15 17:08

Hexavalent Chromium by SOP ERG-MOR-063

<u>Results</u>

<u>MDL</u>

Analyte

CAS Number

FAX: (410) 266-8912

<u>ng/m³ Air</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

ND

Flag

0.0036

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Page 19 of 39



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 02/03/15 13:04

Malvern, PA 19355

01/27/15 to 01/28/15

ATTN: Mr. Jeff Boggs

SUBMITTED: AQS SITE

PHONE: (443) 803-8495

SHE CODE:

Honeywell Hex Chrome Study

Description:

OAM 1

Lab ID:

Sample Volume:

5012726-19

Sampled: 01/26/15 15:01

Matrix:

Air

m³

Received: 01/27/15 15:17

Comments:

Start Time 1/25/15 15:10

21.47

Analysis Date: 01/29/15 14:17

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

Analyte Hexavalent Chromium **CAS Number**

FAX: (410) 266-8912

ng/m³ Air

<u>Flag</u> A-01 ng/m³ Air

1854-02-99

0.0294 5

0.0036

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Page 20 of 39



Environmental Resources Management, Inc

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Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Matrix:

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

02/03/15 13:04

SUBMITTED:

01/27/15 to 01/28/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

OAM 2

Start Time 1/25/15 15:26

Lab ID:

5012726-20

21.57

m³

Sampled: 01/26/15 15:24 Received: 01/27/15 15:17

Analysis Date: 01/29/15 14:27

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte Hexavalent Chromium **CAS Number** 1854-02-99

Sample Volume:

ng/m³ Air 0.0561 5

<u>Flag</u> A-01

ng/m³ Air 0.0036

FEB 0 5 2015

Initials: CR

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Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 02/03/15 13:04

SUBMITTED:

01/27/15 to 01/28/15

Malvern, PA 19355 ATTN: Mr. Jeff Boggs

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PHONE: (443) 803-8495

SOPE CODE:

Honeywell Hex Chrome Study

Description:

PAM-1

Lab ID:

5012726-21

Sampled: 01/26/15 16:23

Matrix:

Air

Sample Volume:

21.76

Received: 01/27/15 15:17 Analysis Date: 01/29/15 12:18

Comments:

Col 1 Start Time 1/25/15 16:12

FAX: (410) 266-8912

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

ng/m³ Air

<u>Flaq</u>

m³

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0304

0.0036

FEB 0 5 2015

A Substantial day, a sense . . .

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Environmental Resources Management, Inc

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Malvern, PA 19355

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FILE #: 3926.00

REPORTED: 02/03/15 13:04

SUBMITTED:

01/27/15 to 01/28/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

PAM-1D

Lab ID:

Sample Volume:

5012726-22

m³

Sampled: 01/26/15 16:27

Received: 01/27/15 15:17 Analysis Date: 01/29/15 12:38

Matrix: Comments:

Col 2 Start Time 1/25/15 16:13

Hexavalent Chromium by SOP ERG-MOR-063

21.81

Results

<u>MDL</u>

<u>Analyte</u>

CAS Number

ng/m³ Air

<u>Flag</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0333

0.0036

FEB 0 5 2015

Initials: CR

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Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Matrix:

Comments:

PAM-2 **Description:**

Air

Start Time 1/25/15 16:03

FAX: (410) 266-8912

Lab ID:

5012726-23

Sample Volume:

m³

FILE #: 3926.00

REPORTED:

SUBMITTED:

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Sampled: 01/26/15 15:58

Received: 01/27/15 15:17 Analysis Date: 01/29/15 14:37

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

02/03/15 13:04

01/27/15 to 01/28/15

Analyte Hexavalent Chromium **CAS Number** 1854-02-99

ng/m³ Air 0.0275

<u>Flaq</u> A-01 ng/m³ Air 0.0036

FEB 0 5 2015

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Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Matrix:

Air

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

02/03/15 13:04

01/27/15 to 01/28/15

SUBMITTED:

AQS SITE

CODE:

Honeywell Hex Chrome Study

Description:

Comments:

PAM-3

Start Time 1/25/15 15:55

Lab ID:

Sample Volume:

5012726-24

21.54

m³

Sampled: 01/26/15 15:51 Received: 01/27/15 15:17

Analysis Date: 01/29/15 14:47

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

<u>ng/m³ Air</u>

<u>Flaq</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0216

A-01

0.0036

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

Page 25 of 39



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

Description:

Comments:

ATTN: Mr. Jeff Boggs

Matrix:

PHONE: (443) 803-8495

Air

PAM-4

Start Time 1/25/15 15:44

FAX: (410) 266-8912

Lab ID:

5012726-25

Sample Volume:

21.58

m³

FILE #: 3926.00

REPORTED:

SUBMITTED:

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Sampled: 01/26/15 15:43

Received: 01/27/15 15:17 Analysis Date: 01/29/15 17:06

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

02/03/15 13:04

01/27/15 to 01/28/15

Analyte Hexavalent Chromium CAS Number 1854-02-99

ng/m³ Air 0.0434 🕤

Flag A-01 ng/m³ Air 0.0036

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Initials: CR

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

Page 26 of 39



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

Matrix:

Comments:

PHONE: (443) 803-8495

Description:

Air

PAM-21

FAX: (410) 266-8912

Lab ID:

Sample Volume:

5012726-26

m³

FILE #: 3926.00

REPORTED:

SUBMITTED: **AQS SITE**

SITE CODE:

Honeywell Hex Chrome Study

Sampled: 01/26/15 00:00

Received: 01/27/15 15:17 Analysis Date: 01/29/15 15:07

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

02/03/15 13:04

01/27/15 to 01/28/15

Analyte Hexavalent Chromium **CAS Number** 1854-02-99

ng/m³ Air ND

<u>Flaq</u>

ng/m³ Air 0.0036

FEB 0 5 2015

Initials: CR

Eastern Research Group



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

Description:

Comments:

ATTN: Mr. Jeff Boggs

Matrix:

PHONE: (443) 803-8495

+43) 003-0493

Air

PAM-31

FAX: (410) 266-8912

912

Lab ID:

5012726-27

Sample Volume:

21.54

m³

FILE #: 3926.00

REPORTED:

SUBMITTED:

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Sampled: 01/26/15 00:00

Received: 01/27/15 15:17 **Analysis Date:** 01/29/15 15:17

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

02/03/15 13:04

01/27/15 to 01/28/15

Analyte
Hexavalent Chromium

CAS Number 1854-02-99

ng/m³ Air ND

Flag

ng/m³ Air 0.0036

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

Page 28 of 39



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 02/03/15 13:04

01/27/15 to 01/28/15

SUBMITTED:

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

OAM 1

Lab ID:

Sample Volume:

5012816-01

m³

Sampled: 01/27/15 14:51

Received: 01/28/15 10:38 Analysis Date: 01/29/15 15:27

Matrix: Comments:

Start Time 1/26/15 15:04

Hexavalent Chromium by SOP ERG-MOR-063

21.4

Results

MDL

<u>Analyte</u>

CAS Number

<u>ng/m³ Air</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

ND

Flag

0.0036

FEB 0 5 2015

Initials: CR

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Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

02/03/15 13:04

REPORTED:

Malvern, PA 19355

FAX: (410) 266-8912

01/27/15 to 01/28/15

AQS SITE

SUBMITTED:

m³

ATTN: Mr. Jeff Boggs PHONE: (443) 803-8495

SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

OAM 2

Lab ID:

5012816-02

Sampled: 01/27/15 15:25

Matrix:

Air

Sample Volume:

21.58

Received: 01/28/15 10:38

Start Time 1/26/15 15:27

Analysis Date: 01/29/15 15:37

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

Analyte

CAS Number

ng/m³ Air

<u>Flag</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

ND

0.0036

FEB 0 5 2015

Initials: CR

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Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 02/03/15 13:04

Malvern, PA 19355

SUBMITTED: 01

01/27/15 to 01/28/15

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

SUECODE:

Honeywell Hex Chrome Study

Description:

PAM-1

Lab ID:

5012816-03

Sampled: 01/27/15 16:23

Matrix: Air

..

an 10. 3012010

Sample Volume:

21.54

m³

Received: 01/28/15 10:38

Analysis Date: 01/29/15 12:57

Comments: Col

Col 1 Start Time 1/26/15 16:27

FAX: (410) 266-8912

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

<u>Analyte</u>

CAS Number

<u>ng/m³ Air</u>

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0152

0.0036

FEB 0 5 2015

Initials: CR

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Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 02/03/15 13:04

Malvern, PA 19355

SUBMITTED:

01/27/15 to 01/28/15

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

FAX: (410) 266-8912

SITE CODE:

m³

Honeywell Hex Chrome Study

Description:

PAM-1D

Lab ID:

5012816-04

Sampled: 01/27/15 16:26 Received: 01/28/15 10:38

Matrix: Comments:

Col 2 Start Time 1/26/15 16:30

Sample Volume:

21.54

Analysis Date: 01/29/15 13:17

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

ng/m³ Air

<u>Flaq</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

ND

U

0.0036

FEB 0 5 2015

Initials: CR

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

Page 32 of 39



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

02/03/15 13:04

Malvern, PA 19355

REPORTED: SUBMITTED:

01/27/15 to 01/28/15

AQS SITE

ATTN: Mr. Jeff Boggs PHONE: (443) 803-8495

SITE CODE:

Honeywell Hex Chrome Study

Description:

PAM-2

Lab ID:

5012816-05

Sampled: 01/27/15 16:08

Analysis Date: 01/29/15 15:46

Matrix:

Air

Sample Volume:

m³

Received: 01/28/15 10:38

Comments: Start Time 1/26/15 16:01

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

ng/m³ Air

<u>Flaq</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

FAX: (410) 266-8912

0.0036

FEB 0 5 2015

Initials: CR

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

Page 33 of 39



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 02/03/15 13:04

Malvern, PA 19355

SUBMITTED:

01/27/15 to 01/28/15

ATTN: Mr. Jeff Boggs

AQS SITE

m³

PHONE: (443) 803-8495

CODE: SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

PAM-3

Lab ID:

5012816-06

Sampled: 01/27/15 15:56

Matrix: Air

A :...

Sample Volume:

21.65

Received: 01/28/15 10:38 **Analysis Date:** 01/29/15 16:16

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

<u>Analyte</u>

CAS Number

FAX: (410) 266-8912

ng/m³ Air ND

<u>Flag</u>

<u>ng/m³ Air</u>

Hexavalent Chromium 1854-02-99

Start Time 1/26/15 15:53

U

0.0036

FEB 0 5 2015

Initials: CR

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Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 02/03/15 13:04

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

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

Matrix:

PAM-4

Start Time 1/26/15 15:47

Lab ID:

Sample Volume:

5012816-07

m³

Sampled: 01/27/15 15:48 Received: 01/28/15 10:38

Analysis Date: 01/29/15 16:26

Hexavalent Chromium by SOP ERG-MOR-063

21.62

Results

<u>MDL</u>

<u>Analyte</u>

CAS Number

ng/m³ Air

ng/m³ Air

Hexavalent Chromium

1854-02-99

ND

<u>Flag</u> U

0.0036

FEB 0 5 2015

Initials: CR

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75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

Matrix:

PHONE: (443) 803-8495

Air

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 02/03/15 13:04

01/27/15 to 01/28/15

SUBMITTED:

AQS SITE

SITE CODE:

<u>Flaq</u>

Honeywell Hex Chrome Study

Description:

Comments:

PAM-21

5012816-08

21.69

m³

Sampled: 01/27/15 00:00 Received: 01/28/15 10:38

Analysis Date: 01/29/15 16:36

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte Hexavalent Chromium **CAS Number** 1854-02-99

Lab ID:

Sample Volume:

ng/m³ Air ND

ng/m³ Air

0.0036

FEB 0 5 2015

Initials: CR

Eastern Research Group



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 02/03/15 13:04

Malvern, PA 19355

SUBMITTED:

01/27/15 to 01/28/15

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

FAX: (410) 266-8912

SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

PAM-31

Lab ID:

5012816-09

Sampled: 01/27/15 00:00

Matrix:

Air

Sample Volume:

m³

Received: 01/28/15 10:38

Analysis Date: 01/29/15 16:46

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

ng/m³ Air

ng/m³ Air

Hexavalent Chromium

1854-02-99

<u>Flag</u> U

0.0036

FEB 0 5 2015

Initials: CR

Eastern Research Group

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

Page 37 of 39



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

ERM

February 18, 2015

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

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

Dear Mr. Boggs,

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

LDC Project #33735:

SDG

Fraction

5012917/5013009

Hexavalent Chromium

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

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

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

Christina Rink

Sincerely,

Project Manager/Chemist

	110 pages-SF 1 WEEK TAT Attachment 1 Level IV LDC #33735 (ERM - Morrisville, NC / Harbor Point, MD, Hexavalent Chromium Monitoring)														Aug) (************************************	Dente C.	T-montone																						
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Laboratory Data Consultants, Inc. Data Validation Report

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

January 28 through January 29, 2015 **Collection Date:**

LDC Report Date: February 17, 2015

Matrix: Air

Parameters: Hexavalent Chromium

Validation Level: **EPA Level IV**

Laboratory: Eastern Research Group

Sample Delivery Group (SDG): 5012917/5013009

Sample Identification

PAM-1(01/29/15)DUP OAM 1(01/28/15) PAM-1D(01/29/15)DUP OAM 2(01/28/15)

PAM-1(01/28/15)

PAM-1D(01/28/15)

PAM-2(01/28/15)

PAM-3(01/28/15)

PAM-4(01/28/15)

PAM-21(01/28/15)

PAM-31(01/28/15)

OAM 1(01/29/15)

OAM 2(01/29/15)

PAM-1(01/29/15) PAM-1D(01/29/15)

PAM-2(01/29/15) PAM-3(01/29/15)

PAM-4(01/29/15)

PAM-21(01/29/15)

PAM-31(01/29/15)

PAM-1(01/28/15)DUP

PAM-1D(01/28/15)DUP

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

Introduction

This data review covers 22 air samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per ASTM D7614 for Hexavalent Chromium.

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

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

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- NJ Presumptive evidence of presence of the compound at an estimated quantity.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

II. Initial Calibration

All criteria for the initial calibration were met.

III. Continuing Calibration

Continuing calibration frequency and analysis criteria were met.

IV. Blanks

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

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

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

V. Matrix Spike/Matrix Spike Duplicates

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

VI. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

VII. Laboratory Control Samples

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

VIII. Sample Result Verification

All sample result verifications were acceptable.

IX. Overall Assessment of Data

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

X. Field Duplicates

Samples PAM-1(1/28/15) and PAM-1D (1/28/15) and samples PAM-1(1/29/15) and PAM-1D (1/29/15) were identified as field duplicates. No hexavalent chromium was detected in any of the samples with the following exceptions:

	Concentrat	tion (ng/m³)			
Analyte	PAM-1(1/28/15)	PAM-1D (1/28/15)	RPD (Limits)	Flags	A or P
Hexavalent chromium	0.0180	0.0181	1 (≤20)	-	-

	Concentrati	on (ng/m³)			
Analyte	PAM-1(1/29/15)	PAM-1D (1/29/15)	RPD (Limits)	Flags	A or P
Hexavalent chromium	0.0305	0.0335	9 (≤20)	-	-

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

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

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

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

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

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

LDC #: 33735A6

VALIDATION COMPLETENESS WORKSHEET

Level IV

Reviewer:

2nd Reviewer: (

SDG #: 5012917/5013009 Laboratory: Eastern Research Group

METHOD: (Analyte) Hexavalent Chromium (ASTM D7614)

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

	Validation Area		Comments
l.	Sample receipt/Technical holding times	A	1/28-29/15
l II	Initial calibration	A	`
III.	Calibration verification	A	
IV	Laboratory Blanks	A	
V	Field blanks	100	FB=(8)(n) TB=(9)(8)
VI.	Matrix Spike/Matrix Spike Duplicates	1)	Not Required
VII.	Duplicate sample analysis	A	DUR
VIII.	Laboratory control samples	A	LUSIO
IX.	Field duplicates	Su	FO=(3,4) (2,13)
X.	Sample result verification	A	
L_XL_	Overall assessment of data	A	

Note:

A = Acceptable

N = Not provided/applicable

SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank

EB = Equipment blank

SB=Source blank OTHER:

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

LDC #: 33735A6

VALIDATION COMPLETENESS WORKSHEET

Level IV

Page: Zof Z Reviewer: 2012 2nd Reviewer: 2012

SDG #: 5012917/5013009 Laboratory: Eastern Research Group

METHOD: (Analyte) Hexavalent Chromium (ASTM D7614)

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

VALIDATION FINDINGS CHECKLIST

Page: _of _Z Reviewer: _\S\S 2nd Reviewer: _\

Method: Inorganics (EPA Method See ()

Metilod.inorganics (LFA Method 300)			, :	
Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	/		<u> </u>	·
Cooler temperature criteria was met.	/	<u> </u>	<u> </u>	
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 99-410% QC limits?	/			
Were titrant checks performed as required? (Level IV only)			/	
Were balance checks performed as required? (Level IV only)				
III. Blanks				
Was a method blank associated with every sample in this SDG?				
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		/		
IV. Matrix spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	/			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.			/	
Were the MS/MSD or duplicate relative percent differences (RPD) \leq 20% for waters and \leq 35% for soil samples? A control limit of \leq CRDL(\leq 2X CRDL for soil) was used for samples that were \leq 5X the CRDL, including when only one of the duplicate sample values were \leq 5X the CRDL.	/			
V. Laboratory control samples	,			
Was an LCS 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?				

Dury

LDC #: 33735A0

VALIDATION FINDINGS CHECKLIST

Page: 2-of Z Reviewer: 50 2nd Reviewer: 0

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.		<u> </u>		

LDC#<u>33735A6</u>

VALIDATION FINDINGS WORKSHEET

Field Duplicates

Page: <u></u> ∫ of <u></u>
Reviewer: 30
2nd Reviewer:

Inorganics: Method See Cover

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

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

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

LDC #: 3573500

Validation Findings Worksheet Initial and Continuing Calibration Calculation Verification

Page:\	of <u>\</u>
Reviewer:_	<u>2D</u>
2nd Reviewe	er:

Method: Inorganics, Method See Cover

The correlation coefficient (r) for the calibration of (was recalculated.Calibration date: 204)

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

%R = Found X 100

Where,

Found = concentration of each analyte measured in the analysis of the ICV or CCV solution

True

True = concentration of each analyte in the ICV or CCV source

					Recalculated	Reported	Acceptable
Type of analysis	Analyte	Standard	Conc. (ng/ml)	Area	r or r ²	r or r ²	(Y/N)
Initial calibration		s1	0.05	0.0000135			
		s2	0.1	0.0000325	0.99999	0.99999	
	(-14	s3	0.2	0.0000712			\triangleleft
		s4	0.5	0.0001971			\cup
		s5	1	0.0004004	_		
		s6	2	0.0008047			
JW (0'.56) Calibration verification	C2+>	Eaux 0,6260 na)w	Jrse O. Snajm		105.2%	- 105.27.R	
CCO (1.56 Calibration verification	Cxxx	0.540.mg/kal	0. Sughel		108.0°%.R	108.0%	Y
Calibration verification		3					

Comments: Refer to Calibration V	/erification findings worksheet f	or list of qualifications and	d associated samples when	reported results do not agree	within
10.0% of the recalculated results.	·				

LDC#: 33735 A/O

VALIDATION FINDINGS WORKSHEET <u>Level IV Recalculation Worksheet</u>

Page: _of_\	_
Reviewer: 30	2
2nd Reviewer:	_

		\sim	\sim
METHOD: Inorganics,	Method	_See	(sover

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:

 $RPD = \underline{[S-D]} \times 100$

Where,

S =

Original sample concentration

(S+D)/2

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	Crth	1-048 mjn)	1-00 vajm)	105%P	105%	J
6)	Matrix spike sample		(SSR-SR)				
DUR 13:45	Duplicate sample	C<*>	0.01660g/m²	0.0180 valu3	8.09%RD.	8.07%R89	5

Comments:			 	 	 	

LDC #: 33735AID

VALIDATION FINDINGS WORKSHEET

Sample Calculation Verification

Page:_	of
Reviewer:	CRE
2nd reviewer:	~ /

METHO	OD: Inorganics, Metho	d <u>See (</u>	over				
Please Y N N Y N N	√A Are results w	been reported an	nd calculated correct of the ins	ectly?		e identified as "N//	Α".
Compo	und (analyte) results for lated and verified using		quation:			rted with a positiv	ve detect were
	ration = $\left(A - \omega\right) \left(\zeta\right)$	Utilon	Recalculation:	0.000	0 141000.	oE-06))	1 Days
A =	-7.66E-96	Jacker W. J.			•		
ري. <u>- ر</u> رء	- 7.66E-96 - 0.0004666	$\frac{3}{M^3}$	= rylu3	<u> </u>	350 ng/ml) (vi 21.57)	$\frac{3}{3}$ = 0	.0181 veglm
					Reported	Calculated	

#_	Sample ID	Analyte	Reported Concentration (valva)	Calculated Concentration (ハムル子)	Acceptable (Y/N)
	(Cr+6	0-000	0.0169	~*
	2	1	0.0129	0.0129	<u> </u>
	3		0.0180	0.080	
	Ч		0.0181	0.0181	
			D.0487	0.0487	
	6		N9	<i>N</i> 3	<u> </u>
	7		0.0233	0.0232	2×
	8		100	こり	
	9		DO -	<i>PD</i>	
	10		0-0213	0.0273	
			0.0233	0.0233	
	\2		0.0305	0.0305	
	13		0-0335	0.0335	
	14		0-0396	0.0396	
	12		D.0288	0.0288	
	16		0.0343	0.0343	
	۱٦		NO	DQ	
	18	<u> </u>	77	100	4
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Note:	- Ronding	



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

Description:

Comments:

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Matrix:

OAM 1

Air

Start Time 1/27/15 14:54

FAX: (410) 266-8912

Lab ID:

5012917-01

Sample Volume:

21.57

m³

FILE #: 3926.00

SUBMITTED:

AQS SITE SITE CODE:

REPORTED: 02/06/15 11:27

Honeywell Hex Chrome Study

Sampled: 01/28/15 14:52 Received: 01/29/15 11:45

Analysis Date: 02/04/15 14:16

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

01/29/15 to 01/30/15

<u>Analyte</u> **Hexavalent Chromium** **CAS Number**

<u>nq/m³ Air</u>

<u>Flaq</u>

ng/m³ Air

1854-02-99

0.0170

0.0036

FEB 1 8 2015

Initials: CR

Eastern Research Group



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

02/06/15 11:27

SUBMITTED:

01/29/15 to 01/30/15

AQS SITE

SITE CODE:

m³

Honeywell Hex Chrome Study

Description:

OAM 2

Air

Lab ID:

Sample Volume:

5012917-02

21,43

Sampled: 01/28/15 15:18

Received: 01/29/15 11:45

Analysis Date: 02/04/15 14:26

Matrix: Comments:

Start Time 1/27/15 15:29

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

Analyte

CAS Number

ng/m³ Air

<u>Flag</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0129

0.0036

FEB 1 8 2015

Initials: CR

Eastern Research Group



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED: 02/06/15 11:27

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

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

PAM-1

Lab ID:

Sample Volume:

5012917-03

21.56

m³

Sampled: 01/28/15 16:23

Received: 01/29/15 11:45 Analysis Date: 02/04/15 13:35

Matrix: Comments:

Col 1 Start Time 1/27/15 16:26

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0180

0.0036

FEB 1 8 2015

Initials: CR



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Matrix:

Description:

Comments:

PAM-1D

FAX: (410) 266-8912

Lab ID:

5012917-04

Sample Volume: 21.57

m³

FILE #: 3926.00

REPORTED:

SUBMITTED:

AQS SITE SITE CODE:

Sampled: 01/28/15 16:27 Received: 01/29/15 11:45

Honeywell Hex Chrome Study

Analysis Date: 02/04/15 17:35

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

02/06/15 11:27

01/29/15 to 01/30/15

CAS Number

Col 2 Start Time 1/27/15 16:28

Flag

ng/m³ Air

Analyte Hexavalent Chromium

1854-02-99

ng/m³ Air 0.0181

0.0036

FEB 1 8 2015

Initials: CR

Eastern Research Group



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

02/06/15 11:27

SUBMITTED:

AQS SITE

SITE CODE:

m³

Honeywell Hex Chrome Study

Analysis Date: 02/04/15 16:55

Description:

PAM-2

Air

Lab ID:

Sample Volume:

5012917-05

21.39

Sampled: 01/28/15 15:58 Received: 01/29/15 11:45

01/29/15 to 01/30/15

Matrix: Comments:

Start Time 1/27/15 16:12

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

Analyte

CAS Number

ng/m³ Air

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0487

0.0036

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Initials: CR



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 02/06/15 11:27

Malvern, PA 19355

SUBMITTED:

01/29/15 to 01/30/15

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

SITE CODE:

Honeywell Hex Chrome Study

Description:

PAM-3

Lab ID: 50:

5012917-06

21.5

Sampled: 01/28/15 15:52

Matrix: A

Air

Sample Volume:

m³

Received: 01/29/15 11:45 **Analysis Date:** 02/04/15 14:46

Comments:

Start Time 1/27/15 15:59

Hexavalent Chromium by SOP ERG-MOR-063
Results

MDL

<u>Analyte</u>

CAS Number

FAX: (410) 266-8912

<u>ng/m³ Air</u>

<u>Flaq</u>

<u>ng/m³ Air</u>

Hexavalent Chromium

1854-02-99

ND

U

0.0036

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Initials: CR

Eastern Research Group

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

Page 8 of 22



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 02/06/15 11:27

Malvern, PA 19355

SUBMITTED:

01/29/15 to 01/30/15

ATTN: Mr. Jeff Boggs

AQS SITE SITE CODE:

PHONE: (443) 803-8495

FAX: (410) 266-8912

5012917-07

Honeywell Hex Chrome Study

Description:

PAM-4

Air

Lab ID:

Sampled: 01/28/15 15:42 Received: 01/29/15 11:45

Matrix: Comments:

Start Time 1/27/15 15:51

Sample Volume:

m³

Analysis Date: 02/04/15 17:05

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

Analyte

CAS Number

<u>ng/m³ Air</u>

<u>Flag</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0233

0.0036

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Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

Description:

Comments:

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Matrix:

Air

PAM-21

FAX: (410) 266-8912

Lab ID:

5012917-08

Sample Volume:

m³

SUBMITTED:

AQS SITE SITE CODE:

FILE #: 3926.00

REPORTED: 02/06/15 11:27

Honeywell Hex Chrome Study

Sampled: 01/28/15 00:00 Received: 01/29/15 11:45

Analysis Date: 02/04/15 15:06

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

01/29/15 to 01/30/15

Analyte Hexavalent Chromium **CAS Number** 1854-02-99

<u>ng/m³ Air</u>

Flag

ng/m³ Air 0.0036

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Initials: CR

Eastern Research Group



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Matrix:

Air

FAX: (410) 266-8912

FILE#: 3926.00

REPORTED:

02/06/15 11:27

SUBMITTED:

01/29/15 to 01/30/15

AQS SITE

SITE CODE:

21.5

Honeywell Hex Chrome Study

Description:

PAM-31

Lab ID:

Sample Volume:

5012917-09

m³

Sampled: 01/28/15 00:00

Received: 01/29/15 11:45 Analysis Date: 02/04/15 15:16

Comments:

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

<u>ng/m³ Air</u>

Flag

ng/m³ Air

Hexavalent Chromium

1854-02-99

ND

0.0036

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Initials: CR

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

Page 11 of 22



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 02/06/15 11:27

Malvern, PA 19355

SUBMITTED:

01/29/15 to 01/30/15

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

FAX: (410) 266-8912

SITE CODE:

m³

Honeywell Hex Chrome Study

Description:

OAM 1

Lab ID: 50130

5013009-01

Sampled: 01/29/15 14:58

Matrix: A

Air

Sample Volume:

21.65

Received: 01/30/15 10:43 **Analysis Date:** 02/04/15 17:15

Comments:

Start Time 1/28/15 14:55

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

<u>Analyte</u>

CAS Number

ng/m³ Air

Flag

<u>ng/m³ Air</u>

Hexavalent Chromium

1854-02-99

0.0273

0.0036

FEB 1 8 2015

Initials: CR

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Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

Description:

Comments:

Hexavalent Chromium

Analyte

ATTN: Mr. Jeff Boggs

Matrix:

PHONE: (443) 803-8495

FAX: (410) 266-8912

OAM 2

Air

Start Time 1/28/15 15:21

FILE #: 3926.00

REPORTED: 02/06/15 11:27

01/29/15 to 01/30/15

SUBMITTED:

AQS SITE

SITE CODE:

m³

Honeywell Hex Chrome Study

<u>Flag</u>

Sampled: 01/29/15 15:22

Received: 01/30/15 10:43

Analysis Date: 02/04/15 17:25

Hexavalent Chromium by SOP ERG-MOR-063

21.61

5013009-02

Results

0.0233

<u>MDL</u>

CAS Number 1854-02-99

ng/m³ Air

Sample Volume:

Lab ID:

ng/m3 Air

0.0036

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Initials: CR

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Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED:

Malvern, PA 19355

02/06/15 11:27

01/29/15 to 01/30/15

ATTN: Mr. Jeff Boggs

AQS SITE

SUBMITTED:

PHONE: (443) 803-8495

FAX: (410) 266-8912

SITE CODE:

21.35

Honeywell Hex Chrome Study

Description:

Matrix:

PAM-1

Lab ID:

Sample Volume:

5013009-03

 m^3

Sampled: 01/29/15 16:09 Received: 01/30/15 10:43

Air **Comments:** Col 1 Start Time 1/28/15 16:26

Analysis Date: 02/04/15 12:56

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

Analyte

CAS Number

ng/m3 Air

<u>Flaq</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0305

0.0036

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Initials: CR

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Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

FAX: (410) 266-8912

FILE #: 3926.00

REPORTED:

02/06/15 11:27

SUBMITTED:

01/29/15 to 01/30/15

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Description:

PAM-1D

Lab ID:

Sample Volume:

5013009-04

21.34

m³

<u>Flag</u>

Sampled: 01/29/15 16:12 Received: 01/30/15 10:43

Analysis Date: 02/04/15 13:16

Matrix: Comments:

Col 2 Start Time 1/28/15 16:29

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

Analyte Hexavalent Chromium **CAS Number**

ng/m³ Air

ng/m³ Air

1854-02-99

0.0335

0.0036

FEB 1 8 2015

Initials: CR



Environmental Resources Management, Inc

75 Valley Stream Parkway, Suite 400

Malvern, PA 19355

Description:

Comments:

Hexavalent Chromium

ATTN: Mr. Jeff Boggs

PHONE: (443) 803-8495

Matrix:

PAM-2

FAX: (410) 266-8912

Lab ID:

5013009-05

Sample Volume:

21.52

m³

<u>Flag</u>

FILE #: 3926.00

REPORTED:

SUBMITTED:

AQS SITE

SITE CODE:

Honeywell Hex Chrome Study

Sampled: 01/29/15 15:58

Received: 01/30/15 10:43 Analysis Date: 02/04/15 15:46

Hexavalent Chromium by SOP ERG-MOR-063

Results ng/m³ Air MDL

02/06/15 11:27

01/29/15 to 01/30/15

CAS Number

ng/m³ Air

Analyte

Start Time 1/28/15 16:03

1854-02-99

0.0396

0.0036

FEB 1 8 2015

Initials: CR

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Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

02/06/15 11:27 REPORTED:

Malvern, PA 19355

SUBMITTED:

01/29/15 to 01/30/15

ATTN: Mr. Jeff Boggs

AQS SITE

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

Start Time 1/28/15 15:55

SITE CODE:

m³

Honeywell Hex Chrome Study

Description:

Comments:

PAM-3

Lab ID:

5013009-06

Sampled: 01/29/15 15:51

Matrix:

Air

Sample Volume:

21.54

Received: 01/30/15 10:43

Analysis Date: 02/04/15 16:15

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

ng/m³ Air

<u>Flag</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0288

0.0036

FEB 1 8 2015

Initials: CR



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

02/06/15 11:27 REPORTED:

Malvern, PA 19355

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

ATTN: Mr. Jeff Boggs

AQS SITE

Matrix:

SITE CODE:

PHONE: (443) 803-8495

Honeywell Hex Chrome Study Sampled: 01/29/15 15:43

Description:

PAM-4

Lab ID:

5013009-07

Received: 01/30/15 10:43

Comments:

Air

Sample Volume:

21.57

m³

Analysis Date: 02/04/15 16:25

Start Time 1/28/15 15:44 Flow rate out of acceptance. Please analyze per

FAX: (410) 266-8912

Hexavalent Chromium by SOP ERG-MOR-063 Results

MDL

Analyte

CAS Number

<u>ng/m³ Air</u>

<u>Flag</u>

ng/m³ Air

Hexavalent Chromium

1854-02-99

0.0343

0.0036

FEB 1 8 2015

Initials: CR

Eastern Research Group



Environmental Resources Management, Inc

FILE#: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 02/06/15 11:27

Malvern, PA 19355

SUBMITTED:

 $\,{\rm m}^3$

01/29/15 to 01/30/15

ATTN: Mr. Jeff Boggs

AQS SITE

PHONE: (443) 803-8495

FAX: (410) 266-8912

SITE CODE:

Honeywell Hex Chrome Study

Description:

Comments:

PAM-21

Lab ID:

5013009-08

Sampled: 01/29/15 00:00

Matrix:

Air

Sample Volume:

21.52

Received: 01/30/15 10:43

Analysis Date: 02/04/15 16:35

Hexavalent Chromium by SOP ERG-MOR-063

Results

<u>MDL</u>

Analyte Hexavalent Chromium **CAS Number** 1854-02-99

ng/m³ Air ND

<u>Flag</u>

<u>nq/m³ Air</u> 0.0036

FEB 1 8 2015

Initials: CR

Eastern Research Group



Environmental Resources Management, Inc

FILE #: 3926.00

75 Valley Stream Parkway, Suite 400

REPORTED: 02/06/15 11:27

Malvern, PA 19355

SUBMITTED:

m³

01/29/15 to 01/30/15

ATTN: Mr. Jeff Boggs

AQS SITE SITE CODE:

PHONE: (443) 803-8495

FAX: (410) 266-8912

Honeywell Hex Chrome Study

Description:

Comments:

PAM-31

Lab ID:

5013009-09

Sampled: 01/29/15 00:00

Matrix:

Air

Sample Volume:

21.54

Received: 01/30/15 10:43

Analysis Date: 02/04/15 16:45

Hexavalent Chromium by SOP ERG-MOR-063

Results

MDL

Analyte

CAS Number

ng/m³ Air

<u>Flag</u>

<u>ng/m³ Air</u>

Hexavalent Chromium

1854-02-99

ND

0.0036

FEB 1 8 2015

Initials: CR

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