LABORATORY DATA CONSULTANTS, INC.



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

March 31, 2014

ERM 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 fraction listed below. Please replace the previously submitted report with the enclosed revised report.

LDC Project # 31460:

<u>SDG</u>

Fraction

4031009

Hexavalent Chromium

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

Sincerely,

Christina Rink Project Manager/Chemist

LDC Report# 31460A6_RV1

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

Collection Date:

Harbor Point, MD, Hexavalent Chromium Monitoring

March 6 through March 7, 2014

Eastern Research Group

LDC Report Date: March 31, 2014

Matrix:

Parameters: Hexavalent Chromium

Air

Validation Level: EPA Level IV

Laboratory:

Sample Delivery Group (SDG): 4031009

Sample Identification

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

Introduction

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

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

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

The following are definitions of the data qualifiers:

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

I. Technical Holding Times

All technical holding time requirements were met.

II. Initial Calibration

All criteria for the initial calibration were met.

III. Calibration verification

Calibration verification frequency and analysis criteria were met.

IV. Blanks

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

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

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

V. Matrix Spike/Matrix Spike Duplicates

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

VI. Duplicates

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

VII. Laboratory Control Samples

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

VIII. Sample Result Verification

All sample result verifications were acceptable.

IX. Overall Assessment of Data

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

X. Field Duplicates

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

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

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

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

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

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

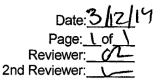
No Sample Data Qualified Due to Laboratory Blank Contamination in this SDG

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

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

VALIDATION COMPLETENESS WORKSHEET LDC #: 31460A6 4031009 SDG #: -3926.00-

Level Jr I V



Laboratory: Eastern Research Group

ASTM 0761 METHOD: Hexavalent Chromium (Laboratory SOP ERG MO -063. Revision-10) inè

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	
١.	Technical holding times	A	Sampling dates: 3/7/14 3/6/14	
11	Initial calibration	A		
111.	Calibration verification	A		
IV	Blanks	<u>A</u>		
v	Matrix Spike/Matrix Spike Duplicates	N	Notrequired	
VI.	Duplicates	F.	1	
VII.	Laboratory control samples	A	LCS/17 right calibration and	batc
VIII.	Sample result verification	A	All defected results, here recalculate	150
IX.	Overall assessment of data	A		Fai.
Х.	Field duplicates	SW	(3, 4)	da
<u> </u>	Field blanks	I TND_	FB=5 TB=6	

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

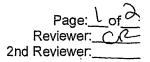
ND = No compounds detected R = Rinsate FB = Field blank

D = Duplicate TB = Trip blank EB = Equipment blank

Validated Samples: aic

	0111	<u></u>			
1	OAM 2	11	21	31	· · · · · · · · · · · · · · · · · · ·
2	OAM 1	12	22	32	·
3	PAM-1D	13	23	33	
4	PAM-1	14	24	34	
5	PAM-21	15	25	35	
6	PAM-31	16	26	36	
7	OAM 2DUP	17	27	37	
8		18	28	38	
9		19	29	39	
10		20	30	40	

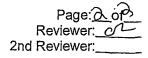
Notes:



Method: Inorganics (EPA Method Second)

Method: Inorganics (EPA Method Seconer)				
Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	V			
Cooler temperature criteria was met.	V			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	V			
Were the proper number of standards used?	\checkmark			
Were all initial calibration correlation coefficients > 0.995?	V	r 		
۲۶۶-۱۱۶% Were all initial and continuing calibration verification %Rs within the 9 0-110 % QC limits?	\checkmark			
Were titrant checks performed as required? (Level IV only)			~	
Were balance checks performed as required? (Level IV only)			V	[
III. Blanks				
Was a method blank associated with every sample in this SDG?	V			-
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		\checkmark		
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.			V	
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?	\checkmark			
Was an LCS analyzed per extraction batch?	~			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	<			
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?				
Were the performance evaluation (PE) samples within the acceptance limits?			/	

VALIDATION FINDINGS CHECKLIST



Validation Area	Yes	No	NA	Findings/Comments						
VII. Sample Result Verification	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.	\checkmark									
X. Field blanks										
Field blanks were identified in this SDG.	V									
Target analytes were detected in the field blanks.		~								

LDC: <u>31460A6</u>

VALIDATION FINDINGS WORKSHEET Field Duplicates

Page:______ Reviewer:_______ 2nd Reviewer:______

Method: Inorganics (see cover)

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

NQ= no qualifiers - data is <5x RL

LDC #: _	31460,46
	· .

Validation Findings Worksheet Initial and Continuing Calibration Calculation Verification

Page: Reviewe 2nd Reviewe

Method: Inorganics, Method <u>See Cover</u>

The correlation coefficient (r) for the calibration of $C_{6}^{6^{4}}$ was recalculated. Calibration date: <u>3/b/14</u>

Where,

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

%R = Found X 100

True

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	A	nalyte	Standard	Conc. (mg/L)	Area	r or r ²	r or r ²	(Y/N)
Initial calibration			s1	0.1	0.0000194			
<u> </u>			s2	0.1	0.000045	0.99994	0.99994	
	$ \cap$	67 .	<u>s3</u>	0.2	0.00009_			
;		•	\$4	0.5	0.0002359			\bigvee_{i}
· ·		F	<u>\$5</u>	1	0.0004753			,
			<u>s6</u>	2	0.0009755			
Calibration verification			ICV.	0,5	0.5104	102	<u> </u>	
Calibration verification			CCV.	0.5	0.5131	103		
Calibration verification	7		CCV	0.5	0.5080	FUZ		A

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 #: 31460Ar

VALIDATION FINDINGS WORKSHEET Level IV Recalculation Worksheet

Page: of)	
Reviewer:	-
2nd Reviewer:	/

METHOD: Inorganics, Method ______

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

%R = <u>Found</u> x 100 Where, Found = True

Found = 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). True = concentration of each analyte in the source.

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

RPD = <u> S-D _</u> x 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	C(6+	G,471	0.463	102	102	4
N	Matrix spike sample		(SSR-SR)				
7	Duplicate sample	q6r	M	NO			7

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

LDC #	: <u></u>	VALIDATION FINDINGS V Sample Calculation Ve			age:of wer: wer:
METH	OD: Inorganics, Method	secover_			
YN	<u>N/A</u> Have results I <u>N/A</u> Are results wi	w for all questions answered "N". Not ap been reported and calculated correctly? thin the calibrated range of the instrume on limits below the CRQL?		re identified as "N	/A".
Compo recalci	ound (analyte) results fo ulated and verified using	orC_6+ the following equation:	rep	orted with a positi	ve detect were
Concent	tration = 1992 +0,00000725 0,0004895	Final WI Recalculation: Home O Air Vol	,000008 +0.00 0.0004895	200072 <u>5/10n</u> (71,1	$\frac{nL}{n^3}$ = 0.01
#	Sample ID	Analyte	Reported Concentration (19/m ³)	Calculated Concentration	Acceptable (Y/N)
	4	Get	6.0146	0.0147	4
			_		
		······································		<u> </u>	

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Note:____

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CERTIFICATE OF ANALYSIS

Environmental Re	esources Managem	ent, Inc		FILE #:	3926.00			
75 Valley Stream	Parkway, Suite 400)		REPORT	REPORTED: 03/12/14 13:35			
Malvern, PA 1935	55			SUBMIT	FED: 03/08/14			
ATTN: Mr. Jeff E	Boggs			AQS SIT	E CODE:			
PHONE: (443)	803-8495 FAX:	(410) 266-8912		SITE CO	DE:	Honeywell Hex Chrome Study		
Description:	OAM 2		Lab ID: 4031009-0	01		Sampled: 03/07/14 13:11		
Matrix:	Air		Sample Volume:	21.73 m ³		Received: 03/08/14 09:49		
Comments:						Analysis Date: 03/10/14 15:12		
			Hexavalent	Chromium				
			<u>Results</u>		MDL			
<u>Analyte</u>		CAS Number	r <u>ng/m³ Air</u>	Flag	<u>ng/m³ Air</u>			
Hexavalent Chromium		1854-02-99	ND	U	0.0036			

023/13/14

Eastern Research Group

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	CERTIFICATE OF AN	ALYSIS	5
Environmental Resources Management, Inc	F	ILE #: 3926	5.00
75 Valley Stream Parkway, Suite 400	F	REPORTED:	03/12/14 13:35
Malvern, PA 19355	s	UBMITTED:	03/08/14
ATTN: Mr. Jeff Boggs	A	QS SITE COE	DE:
PHONE: (443) 803-8495 FAX: (410) 26	5-8912 S	ITE CODE:	Honeywell Hex Chrome Study

Description: Lab ID: 4031009-02 Sampled: 03/07/14 12:25 OAM 1 Sample Volume: mз Received: 03/08/14 09:49 Matrix: Air 21.44 Analysis Date: 03/10/14 15:32 **Comments: Hexavalent** Chromium <u>MDL</u> **Results** <u>Analyte</u> <u>ng/m³ Air</u> <u>ng/m³ Air</u> CAS Number <u>Flag</u> Hexavalent Chromium 1854-02-99 ND U 0.0036

023/13/12

Eastern Research Group

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Environm	ental Re	esources N	lanageme	ent, Inc				FILE #: 392	.00		
75 Valley	Stream	Parkway,	Suite 400					REPORTED:	03/12/14 13	3:35	
Malvern, I	PA 1935	55						SUBMITTED:	03/08/14		
ATTN: M	1r. Jeff E	Boggs						AQS SITE CO	DE:		
PHONE:	(443)	803-8495	FAX:	(410) 266-8912				SITE CODE:		Honeywell Hex Chrome Study	
Descri	ption:	PAM-1D			Lab ID:	4031009-	03			Sampled: 03/07/14 11:28	
M	latrix:	Air			Sample '	Volume:	21.63	m³		Received: 03/08/14 09:49	
Comn	nents:	Col 2								Analysis Date: 03/10/14 15:42	
						Hexavalent	Chro	nium			
						<u>Results</u>		1	MDL		
<u>Analyte</u>				CAS Numbe	er.	<u>ng/m³ Air</u>		<u>Flag</u>	<u>ng/m³ Air</u>		
Hexavalent Ch	nromium			1854-02-99		ND		U	0.0036		
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023/13/14

Eastern Research Group

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RER		CER	TIFICA	TE OF	ANAL	YSIS	3
Environmental Re	sources Managemer	it, Inc		· •	FILE #	: 3926	6.00
75 Valley Stream	Parkway, Suite 400				REPO	RTED:	03/12/14 13:35
Malvern, PA 1935	5				SUBM	ITTED:	03/08/14
ATTN: Mr. Jeff B	oggs				AQS S		DE:
PHONE: (443) 8	803-8495 FAX:	(410) 266-8912			SITE C	ODE:	Honeywell Hex Chrome Study
Description:	PAM-1		Lab ID:	4031009-04	1		Sampled: 03/07/14 11:08
Matrix:	Air	:	Sample Volu	ıme: 2	21.24	m³	Received: 03/08/14 09:49
Comments:	Col 1						Analysis Date: 03/10/14 15:51

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

oe313/14

Eastern Research Group

Environmental Re	esources Manageme	ent, inc		FILE #: 39	926.00	
75 Valley Stream	Parkway, Suite 400			REPORTED:	03/12/14 13	35
Malvern, PA 1935	55			SUBMITTED	: 03/08/14	
ATTN: Mr. Jeff E	Boggs	•		AQS SITE C	ODE:	
PHONE: (443) 8	803-8495 FAX:	(410) 266-8912		SITE CODE:		Honeywell Hex Chrome Study
Description:	PAM-21	Lab II): 4031009-05			Sampled: 03/07/14 12:10
Matrix:	Air	Sampl	le Volume: 2	l.4 m³		Received: 03/08/14 09:49
Comments:						Analysis Date: 03/10/14 16:01
			Hexavalent Ch	nromium		
			<u>Results</u>		<u>MDL</u>	
Analyte		CAS Number	<u>ng/m³ Air</u>	<u>Flag</u>	<u>ng/m³ Air</u>	
Hexavalent Chromium		1854-02-99	ND	U	0.0036	

023/13/14

Eastern Research Group

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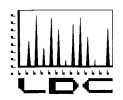
Environmental R	esources Manage	ement, Inc		FILE #:	3926.00				
75 Valley Stream	Parkway, Suite 4	400		REPORTE	REPORTED: 03/12/14 13:35				
Malvern, PA 1938	55			SUBMITTE	ED: 03/08/14				
ATTN: Mr. Jeff B	Boggs			AQS SITE	CODE:				
PHONE: (443)	803-8495 FA	X: (410) 266-8912		SITE COD	E:	Honeywell Hex Chrome Study			
Description:	PAM-31		Lab ID: 4031009-0	6		Sampled: 03/07/14 13:00			
Matrix:	Air		Sample Volume:	21.4 m ³		Received: 03/08/14 09:49			
Comments:						Analysis Date: 03/10/14 16:11			
			Hexavalent (Chromium					
			<u>Results</u>		MDL				
<u>Analyte</u>		CAS Number	er <u>ng/m³ Air</u>	<u>Flag</u>	<u>ng/m³ Air</u>				
Hexavalent Chromium		1854-02-99	ND	U	0.0036				

CR-3/13/14

Eastern Research Group

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LABORATORY DATA CONSULTANTS, INC.



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

March 31, 2014

ERM 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 fraction listed below. Please replace the previously submitted report with the enclosed revised report.

LDC Project # 31482:

<u>SDG</u>

Fraction

4031106

Hexavalent Chromium

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

Sincerely,

Christina Rink Project Manager/Chemist

Laboratory Data Consultants, Inc. Data Validation Report

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

Sample Delivery Group (SDG): 4031106

Sample Identification

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

Introduction

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

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

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

The following are definitions of the data qualifiers:

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

I. Technical Holding Times

All technical holding time requirements were met.

II. Initial Calibration

All criteria for the initial calibration were met.

III. Calibration verification

Calibration verification frequency and analysis criteria were met.

IV. Blanks

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

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

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

V. Matrix Spike/Matrix Spike Duplicates

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

VI. Duplicates

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

VII. Laboratory Control Samples

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

VIII. Sample Result Verification

All sample result verifications were acceptable.

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

IX. Overall Assessment of Data

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

X. Field Duplicates

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

	Concentra	ation (ng/m³)			
Analyte	PAM-1 (03/09/14)	PAM-1D (03/09/14)	RPD (Limits)	Flags	A or P
Hexavalent chromium	0.0215	0.0251	15 (≤20)	-	-

	Concentra	ation (ng/m³)	-		
Analyte	PAM-1 (03/10/14)	PAM-1D (03/10/14)	RPD (Limits)	Flags	A or P
Hexavalent chromium	0.0572	0.0476	18 (≤20)	-	-

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

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

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

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

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

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

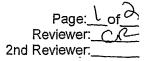
LDC #: <u>31482A6</u> V	ALIDATION COMPLETENESS WORKSHEET	Date: 3/14
SDG #:		Page:of
Laboratory: Eastern Research Gro		Reviewer:
		2nd Reviewer:

METHOD: Hexavalent Chromium (ASTM D7614)

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

L	Validation	<u>) Are</u>	a		<u> </u>	<u> </u>	. Comments	
l	Technical holding times			A	Sampling d	ates: 38	5-10/14	
11	Initial calibration			A		-	, ,	
II I .	Calibration verification			A				
IV	Blanks			A				
v	Matrix Spike/Matrix Spike D	Duplica	ites	N	NOTE	giro		
VI.	Duplicates			A		1		
VII.	Laboratory control samples			A	LCS	D		
VIII.	Sample result verification			A	Recati	lation_ond	HERERS CA	libration, & barche
IX.	Overall assessment of data			A				
Х.	Field duplicates			SW	15,6	Jar (9,12) (15,1	8)
XL	Field blanks			NO	FB=	,10,16	TB=	2,11,17
Validateo	N = Not provided/applicable SW = See worksheet Samples:	•	R = Rins FB = Fie	sate eld blank		TB = Trip bla EB = Equipn		
1 P	AM-21 (03/08/14)	11	PAM-31 (03/0	9/14)	21		31	
2 P	AM-31 (03/08/14)	12	PAM-1D (03/0	<u>)9/14)</u>	22	•.	32	
3 0	AM_1 (03/08/14)	13	OAM 1 (03/10	/14)	23		33	
4 0	AM 2 (03/08/14)	14	OAM 2 (03/10)	/14)	24	· ·	34	
5 P	AM-T (03/08/14)	15	PAM-1 (03/10/	(14)	25		35	
6 P/	AM-1D (03/08/14)	16	PAM-21 (03/10	0/14)	26		36	
7 0,	AM 1 (03/09/14)	17	PAM-31 (03/10	0/14)	27		37	
<u>8 0</u>	AM 2 (03/09/14)	18	PAM-1D (03/1	0/14)	28	· · · · · · · · · · · · · · · · · · ·	38	
9 P/	AM-1 (03/09/14)	19	OAM 1 (03/08/	(14)DUP	29		39	
10 P/	AM-21 (03/09/14)	20			30		40	
lotes:	* VOD-torn	£[]	Her (tex	t)				

LDC #: 31482.46



Method: Inorganics (EPA Method Secone)				
Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	V			
Cooler temperature criteria was met.	V			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	V			
Were the proper number of standards used?	V			
Were all initial calibration correlation coefficients > 0.995?	V	ľ		
۲۶۶-۱۱ 5% Were all initial and continuing calibration verification %Rs within the 9 9-410 % QC limits?				
Were titrant checks performed as required? (Level IV only)			~	
Were balance checks performed as required? (Level IV only)			~	ſ
III. Blanks				······································
Was a method blank associated with every sample in this SDG?	V	[
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		V		
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.	\checkmark			
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.			V	
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?	\checkmark			
Was an LCS analyzed per extraction batch?	\checkmark			
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?		1		
Were the performance evaluation (PE) samples within the acceptance limits?			/	



VALIDATION FINDINGS CHECKLIST

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

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LDC: 31482A6

VALIDATION FINDINGS WORKSHEET Field Duplicates

Method: Inorganics (see cover)

Page:_	_of	<u> </u>
Reviewer:_	C_1	
2nd Reviewer:	V	

ar

	Concentrat	ion (ng/m*)	RPD		
Analyte	5 .	6	(≤ 20)	Qualifiers (Parents Only)	
Hexavalent Chromium	0.0036U	0.0192	137	NQ	

NQ= no qualifiers - data is <5x RL

	Concentral	tion (ng/m [*])	RPD		
Analyte	9	12	(≤ 20)	Qualifiers (Parents Only)	
Hexavalent Chromium	0.0215	0.0251	15		

•

	Concentral	lion (ng/m*)	RPD		
Analyte	15	18	(≤ 20)	Qualifiers (Parents Only)	
Hexavalent Chromium	0.0572	0.0476	18		

LDC #: 31482.46

Validation Findings Worksheet Initial and Continuing Calibration Calculation Verification

Page **Reviewer:** 2nd Reviewe

Method: Inorganics, Method <u>See Cover</u>

The correlation coefficient (r) for the calibration of 2^{4} was recalculated. Calibration date: 3/1/1

Where,

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>

True

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. (mg/L)	Area	r or r ²	r or r ²	(Y/N)
Initial calibration	Initial calibration		0.1	0.0000186			
			0.1	0.0000403	0.99994	0.99994	
· .	Cot	s3	0.2	0.0000866		-	
		s4	0.5	0.0002204			
	r	s5	1	0.0004554	-		
		s6	2	0.0009314			
Calibration verification		ICV	0.5	0.508	102	_	
Calibration verification		CCV		0,5365	107	5	
Calibration verification		T	Z	0.5042	101	-	

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

LDC #: 31482.76

VALIDATION FINDINGS WORKSHEET Level IV Recalculation Worksheet

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Page Reviewer 2nd Reviewer:

METHOD: Inorganics, Method ______

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

 %R = Found_x 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 = <u> S-D </u> x 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	G6+	0.462	0.463	901.8	99,q	7
N	Matrix spike sample		(SSR-SR)				
19	Duplicate sample	G ⁶⁺	0.07.08	0,0214	a.96	2.96	7

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

LDC	LDC #: VALIDATION FINDINGS WORKSHEET Page:Of Sample Calculation Verification Reviewer:2nd reviewer:											
MET	METHOD: Inorganics, Method <u>See rover</u>											
	<u>N/A</u> Have results <u>N/A</u> Are results w <u>N/A</u> Are all detect	by for all questions answered "N". Not a been reported and calculated correctly? ithin the calibrated range of the instrumetion limits below the CRQL? orC^+ to g the following equation:	ents?	re identified as "N orted with a positi								
			$\infty (a + 0.00)$	00837	1m							
-	Area-Stope Slope	(Aicval)	0,000468	2	ZIOHM							
	SIGAL				0.019206p							
#	Sample ID	Analyte	Reported Concentration (Mg/MA3	Calculated Concentration (1)2/m ³)	Acceptable (Y/N)							
	6	Got	0.0192	0.042	1							
	9		00215	0.0215								
	12		0.025)	0,0251								
	13		0.0272	0,0272								
	14		6.0277	0.0277								
	15		0,0572	0.0572								
	18		0.04-76	0.0476								

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CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc					FILE #: 3926.00			
75 Valley Stream Parkway, Suite 400					03/14/14 11:15			
Malvern, PA 193	55			SUBMITTED:	03/11/14			
ATTN: Mr. Jeff I PHONE: (443)	Boggs 803-8495 FAX:	(410) 266-8912		AQS SITE CODE: SITE CODE:	I	Honeywell Hex Chrome Study		
Description:	PAM-21	Lat	ID: 4031106-01			Sampled: 03/08/14 13:40		
Matrix:	Air	Sar	nple Volume: 2	0.74 m³		Received: 03/11/14 11:06		
Comments:						Analysis Date: 03/11/14 17:09		
			Hexavalent C	hromium				
			Results		MDL			
<u>Analyte</u>		CAS Number	<u>ng/m³ Air</u>	Flag	<u>ng/m³ Air</u>			
Hexavalent Chromium		1854-02-99	ND	U	0.0036			

023/14/14

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Environmental R	esources Ma	nageme	ent, Inc				FILE #: 392	6.00		
75 Valley Stream	Parkway, Su	uite 400					REPORTED:	03/14/14 11:	15	
Malvern, PA 1938	55				,		SUBMITTED:	03/11/14		
ATTN: Mr. Jeff B PHONE: (443)	3oggs 803-8495	FAX:	(410) 266-8912				AQS SITE		Honeywell Hex Chrome Study	
Description:	PAM-31			Lab ID:	403110	6-02			Sampled: 03/08/14 13:14	
Matrix:	Air			Sample V	olume:	21.74	l m³		Received: 03/11/14 11:06	
Comments:									Analysis Date: 03/11/14 17:19	
Hexavalent Chromium										
					<u>Results</u>			MDL		
<u>Analyte</u>			CAS Numbe	er	<u>ng/m³ Ai</u>	r	Flag	<u>ng/m³ Air</u>		
Hexavalent Chromium			1854-02-99		ND		U	0.0036		

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Environmental Res	sources Manageme	nt, Inc		FILE #: 3926.00									
75 Valley Stream F	Parkway, Suite 400			REPORTED:	03/14/14 11:15								
Malvern, PA 19355	5			SUBMITTED:	03/11/14								
ATTN: Mr. Jeff Boggs PHONE: (443) 803-8495 FAX: (41		(410) 266-8912		AQS SITE CODE: SITE CODE:	Honeywell Hex Chrome Study								
Description:	OAM 1		Lab ID: 4031106-03		Sampled: 03/08/14 11:55								
Matrix:	Air		Sample Volume: 20.7	7 m³	Received: 03/11/14 11:06								
Comments:					Analysis Date: 03/11/14 16:20								
Hexavalent Chromium													
			<u>Results</u>		MDL								
<u>Analyte</u>		CAS Number	<u>r ng/m³ Air</u>	<u>Flag</u>	<u>ng/m³ Air</u>								
Hexavalent Chromium		1854-02-99	0.0214		0.0036								

023/14/14

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NER			CEF	RTIFIC	ATE (OF A	NALYSIS	5				
Environmental Resources Management, Inc							FILE #: 3926.00					
75 Valley Stream Parkway, Suite 400							REPORTED:	RTED: 03/14/14 11:15				
Malvern, PA 19355							SUBMITTED:	03/11/14				
ATTN: Mr. Jeff B PHONE: (443)	3oggs 803-8495	FAX:	(410) 266-8912				AQS SITE CODE: SITE CODE:		Honeywell Hex Chrome Study			
Description:	OAM 2			Lab ID:	403110	6-04			Sampled: 03/08/14 12:47			
Matrix:	Air			Sample V	olume:	20.74	1 m³		Received: 03/11/14 11:06			
Comments:									Analysis Date: 03/11/14 16:40			
Hexavalent Chromium												
					<u>Results</u>			<u>MDL</u>				
<u>Analyte</u>			CAS Numbe	er.	<u>ng/m³ Ai</u>	Ľ	<u>Flag</u>	<u>ng/m³ Air</u>				
Hexavalent Chromium			1854-02-99		ND		U	0.0036				

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Environmental Re	esources Manag	jement, Inc			FILE #: 3926.00			
75 Valley Stream	Parkway, Suite	400			REPORTED: 03/14/14 11:15			
Malvern, PA 19355						SUBMITTED: 03/11/14		
ATTN: Mr. Jeff E PHONE: (443)		AX: (410) 266-8912			AQS SITE CODE: SITE CODE:		Honeywell Hex Chrome Study	
Description:	PAM-1D		Lab ID: 403110	6-06			Sampled: 03/08/14 11:20	
Matrix:	Air		Sampie Volume:	21.04	m³		Received: 03/11/14 11:06	
Comments:	Col 2						Analysis Date: 03/11/14 16:59	
			Hexavalen	t Chro	mium			
			<u>Results</u>			MDL		
<u>Analyte</u>		<u>CAS Numbe</u>	er <u>ng/m³ Ai</u> j	5	<u>Flag</u>	<u>ng/m³ Air</u>		
Hexavalent Chromiun	n	1854-02-99	0.0192		D-F	0.0036		

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Environmental Re	Environmental Resources Management, Inc					FILE #: 3926.00			
75 Valley Stream I	Parkway, Suite 400		REPORTED: 03/14/14 11:15						
Malvern, PA 1935		SUBMITTED: 03/11/14							
ATTN: Mr. Jeff B		AQS SITE							
PHONE: (443) 8	803-8495 FAX: (41	10) 266-8912		SITE CODE:	ŀ	oneywell Hex Chrome Study			
Description:	OAM 1	Lab ID:	4031106-07			Sampled: 03/09/14 12:18			
Matrix:	Air	Sample	Volume: 20.9	3 m³		Received: 03/11/14 11:06			
Comments:	Sample collected on Day	light Savings Time				Analysis Date: 03/11/14 17:29			
			Hexavalent Chro	omium					
			<u>Results</u>		MDL				
<u>Analyte</u>		CAS Number	<u>ng/m³ Air</u>	Flag	<u>ng/m³ Air</u>				
Hexavalent Chromium		1854-02-99	0.0185		0.0036				

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Environmental Re	sources Management,	Inc	FILE #: 3	FILE #: 3926.00			
75 Valley Stream I	Parkway, Suite 400			REPORTED	REPORTED: 03/14/14 11:15		
Malvern, PA 1935	5		SUBMITTE	SUBMITTED: 03/11/14			
ATTN: Mr. Jeff B PHONE: (443) 8		10) 266-8912		AQS SITE CODE: SITE CODE	:	Honeywell Hex Chrome Study	
Description:	OAM 2	Lab ID	4031106-08			Sampled: 03/09/14 12:59	
Matrix:	Air	Sample	e Volume: 2	0.76 m³		Received: 03/11/14 11:06	
Comments:	Sample collected on Day	light Savings Time				Analysis Date: 03/11/14 17:39	
			Hexavalent C	hromium			
			<u>Results</u>		MDL		
<u>Analyte</u>		CAS Number	<u>ng/m³ Air</u>	Flag	<u>ng/m³ Air</u>		
Hexavalent Chromium		1854-02-99	0.0234		0.0036		

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Environmental Re	sources Management, li	าด	FILE #: 3926.00					
75 Valley Stream I	75 Valley Stream Parkway, Suite 400					REPORTED: 03/14/14 11:15		
Malvern, PA 1935		SUBMITTED:	UBMITTED: 03/11/14					
ATTN: Mr. Jeff B		AQS SITE						
PHONE: (443) 8	03-8495 FAX: (41	0) 266-8912		SITE CODE:	н	oneywell Hex Chrome Study		
Description:	PAM-1	Lab ID:	4031106-09			Sampled: 03/09/14 11:24		
Matrix:	Air	Sample \	Volume: 20.7	75 m³		Received: 03/11/14 11:06		
Comments:	Col 1 Sample collected or	n Daylight Savings Time			/	Analysis Date: 03/11/14 17:49		
		I	Hexavalent Chr	omium				
			<u>Results</u>		MDL			
<u>Analyte</u>		CAS Number	<u>ng/m³ Air</u>	<u>Flag</u>	<u>ng/m³ Air</u>			
Hexavalent Chromium		1854-02-99	0.0215		0.0036			

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Environmental Re	esources Management,	Inc	FILE #:	FILE #: 3926.00			
75 Valley Stream	Parkway, Suite 400			REPOR	REPORTED: 03/14/14 11:15		
Malvern, PA 1935		SUBMI	SUBMITTED: 03/11/14				
ATTN: Mr. Jeff Boggs					AQS SITE		
PHONE: (443)	803-8495 FAX: (4	10) 266-8912		SUBE	DDE:	H	Ioneywell Hex Chrome Study
Description:	PAM-21	Lab ID	: 4031106-:	10			Sampled: 03/09/14 12:05
Matrix:	Air	Sample	e Volume:	20.93 m	l ³		Received: 03/11/14 11:06
Comments:	Sample collected on Da	ylight Savings Time					Analysis Date: 03/11/14 18:29
			Hexavalent	Chromium			
			Results			MDL	
<u>Analyte</u>		CAS Number	<u>ng/m³ Air</u>	<u>Flag</u>		<u>ng/m³ Air</u>	
Hexavalent Chromium		1854-02-99	ND	U		0.0036	

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Environmental Re	nvironmental Resources Management, Inc				FILE #: 3926.00				
75 Valley Stream	Parkway, Suite 400			REPORTED: 03/14/14 11:15					
Malvern, PA 1935		SUBMITTED:	SUBMITTED: 03/11/14						
ATTN: Mr. Jeff E PHONE: (443) 8	••	10) 266-8912		AQS SITE CODE: SITE CODE:	F	loneywell Hex Chrome Study			
Description:	PAM-31	Lab ID:	4031106-11			Sampled: 03/09/14 12:09			
Matrix:	Air	Sample V	/olume: 20.9	93 m³		Received: 03/11/14 11:06			
Comments:	Sample collected on Day	light Savings Time				Analysis Date: 03/11/14 18:38			
Hexavalent Chromium Results MDL									
<u>Analyte</u>		CAS Number	ng/m³ Air	<u>Flag</u>	ng/m³ Air				
Hexavalent Chromium		1854-02-99	ND	U	0.0036				

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Environmental Res	sources Management, In	c		FILE #: 3926.00			
75 Valley Stream F	Parkway, Suite 400			REPORTED:	EPORTED: 03/14/14 11:15		
Malvern, PA 19355		SUBMITTED:	ED: 03/11/14				
ATTN: Mr. Jeff Bo PHONE: (443) 8)) 266-8912		AQS SITE CODE: SITE CODE:	Hor	neywell Hex Chrome Study	
Description:	PAM-1D	Lab ID;	4031106-12			Sampled: 03/09/14 11:33	
Matrix:	Air	Sample V	/olume: 21.5	7 m³		Received: 03/11/14 11:06	
Comments:	Col 2 Sample collected on	Daylight Savings Time			An	alysis Date: 03/11/14 18:19	
		ŀ	lexavalent Chro	omium			
			<u>Results</u>		MDL		
Analyte		CAS Number	<u>ng/m³ Air</u>	<u>Flag</u>	<u>ng/m³ Air</u>		
Hexavalent Chromium		1854-02-99	0.0251		0.0036		

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Environmental Reso	nvironmental Resources Management, Inc					FILE #: 3926.00				
75 Valley Stream Pa	arkway, Suite 400				REPORTED	: 03/14/14 11	:15			
Malvern, PA 19355): 03/11/14				
ATTN: Mr. Jeff Bog PHONE: (443) 803		(410) 266-8912			AQS SITE CODE: SITE CODE:	:	Honeywell Hex Chrome Study			
Description: 0	DAM 1		Lab ID: 403	1106-13			Sampled: 03/10/14 11:47			
Matrix: A	Air		Sample Volume:	20.8	6 m³		Received: 03/11/14 11:06			
Comments:							Analysis Date: 03/11/14 18:48			
	Hexavalent Chromium Results MDL									
Analyte		CAS Numbe			<u>Flag</u>	ng/m³ Air				
Hexavalent Chromium		1854-02-99	0.027	2		0.0036				

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Environmental Resources Manage	ement, Inc		FILE #: 3926.00						
75 Valley Stream Parkway, Suite 4	400		REPORTED: 03/14/14 11:15						
Malvern, PA 19355		SUBMITTED:	SUBMITTED: 03/11/14						
ATTN: Mr. Jeff Boggs PHONE: (443) 803-8495 FA	X: (410) 266-8912		AQS SITE CODE: SITE CODE:	Hone	ywell Hex Chrome Study				
Description: OAM 2	Lab ID:	4031106-14			Sampled: 03/10/14 12:27				
Matrix: Air	Sample V	olume: 20.96	5 m³		Received: 03/11/14 11:06				
Comments:				Anal	ysis Date: 03/11/14 18:58				
Hexavalent Chromium Results MDL									
<u>Analyte</u>	CAS Number	<u>nq/m³ Air</u>	<u>Flag</u>	<u>ng/m³ Air</u>					
Hexavalent Chromium	1854-02-99	0.0277		0.0036					

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Environmental Re	sources Manageme	nt, Inc		FILE #: 3926.00			
75 Valley Stream	Parkway, Suite 400			REPORTED: 03/14/14 11:15			
Malvern, PA 1935		SUBMITTED:	SUBMITTED: 03/11/14				
ATTN: Mr. Jeff E PHONE: (443) 8	•••	(410) 266-8912		AQS SITE CODE: SITE CODE:	Н	oneywell Hex Chrome Study	
Description:	PAM-1	Lab	ID: 4031106-15			Sampled: 03/10/14 10:32	
Matrix:	Air	Sam	ple Volume: 20.7	′5 m³		Received: 03/11/14 11:06	
Comments:	Col 1					Analysis Date: 03/11/14 19:50	
			Hexavalent Chro	omium			
			Results		MDL		
<u>Analyte</u>		CAS Number	<u>ng/m³ Air</u>	<u>Flag</u>	<u>ng/m³ Air</u>		
Hexavalent Chromium	1	1854-02-99	0.0572		0.0036		

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Environmental Re	nvironmental Resources Management, Inc				FILE #: 3926.00			
75 Valley Stream	Parkway, Suite 40	0			REPORTED: 03/14/14 11:15			
Malvern, PA 19355					SUBMITTED:	03/11/14		
ATTN: Mr. Jeff B PHONE: (443)	Boggs 803-8495 FAX	(410) 266-8912			AQS SITE CODE: SITE CODE:		Honeywell Hex Chrome Study	
Description:	PAM-21		Lab ID: 4031	.106-16		······································	Sampled: 03/10/14 11:40	
Matrix:	Air		Sample Volume:	20.86	5 m³		Received: 03/11/14 11:06	
Comments:							Analysis Date: 03/11/14 20:10	
			Hexava	lent Chro	mium			
			Result	s		MDL.		
<u>Analyte</u>		CAS Numbe	er ng/m³	Air	<u>Flag</u>	<u>nq/m³ Air</u>		
Hexavalent Chromium		1854-02-99	ND		U	0.0036		

3/11/14

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Environmental Re	esources Managemo	ent, Inc		FILE #: 3	FILE #: 3926.00			
75 Valley Stream	Parkway, Suite 400			REPORTED	REPORTED: 03/14/14 11:15			
Malvern, PA 1935	55			SUBMITTED	D: 03/11/14			
ATTN: Mr. Jeff E PHONE: (443)	•••	(410) 266-8912		AQS SITE CODE: SITE CODE:	: 1	Honeywell Hex Chrome Study		
Description:	PAM-31		Lab ID: 4031106-17	7		Sampled: 03/10/14 11:46		
Matrix:	Air	5	Sample Volume: 2	20.86 m³		Received: 03/11/14 11:06		
Comments:						Analysis Date: 03/11/14 20:20		
			Hexavalent C	hromium				
			Results		MDL			
<u>Analyte</u>		CAS Number	<u>ng/m³ Air</u>	<u>Flag</u>	<u>ng/m³ Air</u>			
Hexavalent Chromium		1854-02-99	ND	V	0.0036			

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CERTIFICATE OF ANALYSIS

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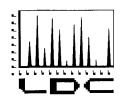
Environmental Re	esources Managem	ent, Inc	FILE #: 3926.00				
75 Valley Stream	Parkway, Suite 400			REPORTED:	03/14/14 11:15		
Malvern, PA 1935	5			SUBMITTED:	03/11/14		
ATTN: Mr. Jeff E	loggs			AQS SITE			
PHONE: (443)	803-8495 FAX:	(410) 266-8912		SITE CODE:	Honey	well Hex Chrome Study	
Description:	PAM-1D	Lab	ID: 4031106-18		S	ampled: 03/10/14 10:48	
Matrix:	Air	Sam	iple Volume: 20.74	4 m³	R	eceived: 03/11/14 11:06	
Comments:	Col 2				Analy	sis Date: 03/11/14 20:00	
			Hexavalent Chro	omium			
			Results		MDL		
<u>Analyte</u>		CAS Number	<u>ng/m³ Air</u>	<u>Flag</u>	<u>ng/m³ Air</u>		
Hexavalent Chromium	1	1854-02-99	0.0476		0.0036		

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LABORATORY DATA CONSULTANTS, INC.



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

March 31, 2014

ERM 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 fraction listed below. Please replace the previously submitted report with the enclosed revised report.

LDC Project # 31489:

SDGFraction4031210/4031301Hexavalent Chromium

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

Sincerely,

Christina Rink Project Manager/Chemist

Laboratory Data Consultants, Inc. Data Validation Report

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

Sample Delivery Group (SDG): 4031210/4031301

Sample Identification

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

Introduction

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

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

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

The following are definitions of the data qualifiers:

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

I. Technical Holding Times

All technical holding time requirements were met.

II. Initial Calibration

All criteria for the initial calibration were met.

III. Calibration verification

Calibration verification frequency and analysis criteria were met.

IV. Blanks

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

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

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

V. Matrix Spike/Matrix Spike Duplicates

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

VI. Duplicates

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

VII. Laboratory Control Samples

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

VIII. Sample Result Verification

All sample result verifications were acceptable.

IX. Overall Assessment of Data

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

X. Field Duplicates

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

	Concentra	ation (ng/m³)			
Analyte	PAM-1 (03/11/14)	PAM-1D (03/11/14)	RPD (Limits)	Flags	A or P
Hexavalent chromium	0.0697	0.0753	8 (≤20)	-	-

	Concentra	ation (ng/m³)		T	
Analyte	PAM-1 (03/11/14)	PAM-1D (03/11/14)	RPD (Limits)	Flags	A or P
Hexavalent chromium	0.0741	0.0771	4 (≤20)	-	-

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

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

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

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

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

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

LDC #:_	31489A6	VALIDATION COMPLETENESS
SDG #:_	4031210/4031301	

Level# II

WORKSHEET

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Date: 3/////
Page: <u></u> bf_ <u>\</u>
Reviewer: 01
2nd Reviewer:
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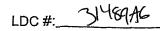
Laboratory: Eastern Research Group

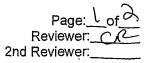
METHOD: Hexavalent Chromium (ASTM D7614)

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

	Validation	Area	۹				Comments	
I.	Technical holding times			A	Sampling o	lates: 3/11	-12/1	-1
11	Initial calibration			R I				•
111	Calibration verification			A I				
IV	Blanks			A				
	Matrix Spike/Matrix Spike D	uplica	tes	N	Nor	rearred		
VI	Duplicates			A	DLP			
VII	. Laboratory control samples			A	LCS	/D		
VII	. Sample result verification			A	Detec	S ICAL, CC	-, Batch G	K recolar lated
IX.	Overail assessment of data			A				
X .	Field duplicates			Si	13,4) (9,10)		
	Eield blanks			NQ	FB=	5.1	Γ <u>B=6</u> ,	12
Note: Valida	Note: A = Acceptable ND = No compounds detected D = Duplicate N = Not provided/applicable R = Rinsate TB = Trip blank SW = See worksheet FB = Field blank EB = Equipment blank							
1	OAM 1 (03/11/14)	11	PAM-21 (03/1	2/14)	21		31	
2	OAM 2 (03/11/14)	12	PAM-31 (03/1	2/14)	22		32	
3	PAM-1 (03/11/14)	13	PAM-1 (03/11	/14)DUP	23		33	
4	PAM-1D (03/11/14)	14	PAM-1D (03/1	1/14)DUP	24	·	34	
5	PAM-21 (03/11/14)	15	PAM-1 (03/12	/14)DUP	25		35	
6	PAM-31 (03/11/14)	16	PAM-1D (03/1	2/14)DUP	26		36	
7	OAM 1 (03/12/14)	17			27		37	
8	OAM 2 (03/12/14)	18			28		38	
9	PAM-1 (03/12/14)	19			29		39	
10	PAM-1D (03/12/14)	20			_30		40	

Notes:





Method: Inorganics (EPA Method Second	er)
---------------------------------------	-----

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	V			
Cooler temperature criteria was met.	\checkmark			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	V			
Were the proper number of standards used?	\checkmark			
Were all initial calibration correlation coefficients > 0.995?	V	r 		
۲۶۶-۱۱ 5% Were all initial and continuing calibration verification %Rs within the 9 9-110 % QC limits?	レ			
Were titrant checks performed as required? (Level IV only)			~	
Were balance checks performed as required? (Level IV only)		·····	V	F
III. Blanks				
Was a method blank associated with every sample in this SDG?	V			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		V		
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.	\checkmark			
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.			V	
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.	\checkmark			
V. Laboratory control samples				
Was an LCS anaylzed for this SDG?	\checkmark			
Was an LCS analyzed per extraction batch?	\checkmark			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	<			
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		/		
Were the performance evaluation (PE) samples within the acceptance limits?			/	

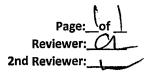


VALIDATION FINDINGS CHECKLIST

Validation Area	Yes	No	NA	Findings/Comments
VII. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	<			
Were detection limits < RL?	\checkmark			
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.	\checkmark			
X. Field blanks				
Field blanks were identified in this SDG.	V			
Target analytes were detected in the field blanks.		V		

.

VALIDATION FINDINGS WORKSHEET Field Duplicates



Method: Inorganics (see cover)

	Concentra	tion (ng/m [*])	RPD	Outelifiers (Densets Oaks)	
Analyte	3	4	(≤ 20)	Qualifiers (Parents Only)	
Hexavalent Chromium	0.0697	0.0753	8		

	Concentra	tion (ng/m°)	RPD		
Analyte	9	10	(≤ 20)	Qualifiers (Parents Only)	
Hexavalent Chromium	0.0741	0.0771	4		

\\LDCFILESERVER\Validation\FIELD DUPLICATES\FD_inorganic\31489A6.xlsx

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LDC #: 3148

Validation Findings Worksheet Initial and Continuing Calibration Calculation Verification

Page Reviewe **2nd Reviewer**

Method: Inorganics, Method <u>See Cover</u>

The correlation coefficient (r) for the calibration of $\underline{\Box}^{e^+}$ was recalculated. Calibration date: $\underline{313/19}$

Where,

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

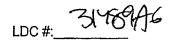
%R = Found X 100

True

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	Ana	lyte	Standard	Conc. (mg/L)	Area	r or r ²	r or r ²	(Y/N)
Initial calibration			s1	0.1	0.0000181			
			s2	0.1	0.0000363	0.99994	0.99994 0.99994	. ,
	0,0	5+	s3	0.2	0.0000814			4
	$ \zeta$		<u>s4</u> _	0.5	0.0002204			
			s5	1	0.0004546			
			s6	2	0.0008997			
Calibration verification			FOU	0.5	0.5738	105	-	
Calibration verification			QCV		0.5495	110		
Calibration verification		\checkmark			05423	801		

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



VALIDATION FINDINGS WORKSHEET Level IV Recalculation Worksheet

Page:of
Reviewer: <u>9</u>
2nd Reviewer: /
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METHOD: Inorganics, Method Secover

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

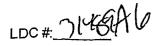
%R = <u>Found</u> x 100 Where, True Found = concentration of each analyte <u>measured</u> in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result). True = concentration of each analyte in the source.

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

RPD = <u> S-D </u> x 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	Acceptable (Y/N)
LCS	Laboratory control sample	C(⁶⁴	0,486	0.463	105	105	4
N	Matrix spike sample		(SSR-SR)				
51	Duplicate sample	Q ^{GT}	0.0675	0.0697	3.21	3,2\	4

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



VALIDATION FINDINGS WORKSHEET Sample Calculation Verification

Page:	of_	(
Reviewer:	<u>a</u> 2-	· /
2nd reviewer:	_b	\leq

Secorer METHOD: Inorganics, Method ____

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

Y<u>N N/A</u> 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? YN N/A

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

Concentration =

-Stentercent/Final Vol Slope (Airvan

Recalculation: 0.0000403 +0.000066]

#	Sample ID	Analyte	Reported Concentration (1871)	Calculated Concentration	Acceptable (Y/N)
		Cr ⁶⁺	0.0194	0.0494	X
	ð		00938	0.0938	
	3		0.0697	0.0697	
	4		0,0753	00753	
	7		00419	0.044	
	S		0.0659	0.0659	
	9		0.0741	0.0741	
	10		00771	0.0771	
 					
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Note:

Environmental Resources Management, Inc					FILE #: 3926.00			
75 Valley Stream Par	rkway, Suite 400			REPORT	ED: 03/17/14 11:	10		
Malvern, PA 19355				SUBMIT	ED: 03/12/14	io 03/13/14		
ATTN: Mr. Jeff Bogg PHONE: (443) 803-	•	(410) 266-8912		AQS SITI		Honeywell Hex Chrome Study		
Description: 04	AM 1	La	ab ID: 4031210-	01		Sampled: 03/11/14 11:22		
Matrix: Air	ir	Sa	ample Volume:	20.88 m ³		Received: 03/12/14 11:16		
Comments:						Analysis Date: 03/13/14 15:00		
			Hexavalent <u>Results</u>	Chromium	MDL			
<u>Analyte</u> Hexavalent Chromium		CAS Number 1854-02-99	<u>ng/m³ Air</u> 0.0494	<u>Flaq</u>	<u>ng/m³ Air</u> 0.0036			

023/17/14

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Environmental Resources Management, Inc					FILE #: 3926.00			
75 Valley Stream Parky	way, Suite 400					REPORTE	D: 03/17/14 11:	10
Malvern, PA 19355						SUBMITTE	D: 03/12/14	to 03/13/14
ATTN: Mr. Jeff Boggs PHONE: (443) 803-8		(410) 266-8912				AQS SITE CODE: SITE CODE	E:	Honeywell Hex Chrome Study
Description: OAN	M 2		Lab ID:	4031210-0	2			Sampled: 03/11/14 12:20
Matrix: Air			Sample Vo	olume:	21.3	m³		Received: 03/12/14 11:16
Comments:								Analysis Date: 03/13/14 15:10
			н	exavalent (Chroi	mium		
				<u>Results</u>			MDL	
<u>Analyte</u>		CAS Numbe	<u>r</u>	<u>ng/m³ Air</u>		<u>Flag</u>	<u>ng/m³ Air</u>	
Hexavalent Chromium		1854-02-99		0.0938			0.0036	

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Environmental Resources Manage	ement, Inc	FILE #: 3926.00		
75 Valley Stream Parkway, Suite 4	00	R	REPORTED: 03/17/14	11:10
Malvern, PA 19355		s	UBMITTED: 03/12/	4 to 03/13/14
ATTN: Mr. Jeff Boggs			QS SITE	
PHONE: (443) 803-8495 FA	X: (410) 266-8912	S	ITECODE:	Honeywell Hex Chrome Study
Description: PAM-1	Lab ID:	4031210-03		Sampled: 03/11/14 10:22
Matrix: Air	Sample V	olume: 21.33	m³	Received: 03/12/14 11:16
Comments: Col 1	- u			Analysis Date: 03/13/14 15:20
	ŀ	lexavalent Chrom	ium	
		<u>Results</u>	MDL	
Analyte	CAS Number	<u>ng/m³ Air</u>	<u>Flag ng/m³ /</u>	<u>Nir</u>
Hexavalent Chromium	1854-02-99	0.0697	0.003	;

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Environmental Resources Management, Inc					FILE #: 3926.00					
75 Valley Stream	Parkway, Suit	e 400					REPORTI	ED: (03/17/14 11	:10
Malvern, PA 1935	5						SUBMITT	ſED:	03/12/14	to 03/13/14
ATTN: Mr. Jeff B PHONE: (443) 8	00	FAX: (4	410) 266-8912				AQS SITE			Honeywell Hex Chrome Study
Description:	PAM-1D			Lab ID:	4031210	-04				Sampled: 03/11/14 10:48
Matrix:	Air			Sample Vo	lume:	21.49	m³			Received: 03/12/14 11:16
Comments:	Col 2									Analysis Date: 03/13/14 15:40
				He	exavalent	: Chro	mium			
					<u>Results</u>				MDL	
<u>Analyte</u>			CAS Numbe	er i	<u>ng/m³ Air</u>		<u>Flaq</u>		<u>ng/m³ Air</u>	
Hexavalent Chromium	I		1854-02-99		0.0753				0.0036	

023/17/14

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Environmental Resources Management, Inc					FILE #: 3926.00			
75 Valley Stream P	arkway, Suite 40	00			REPORTED:	03/17/14 11:	10	
Malvern, PA 19355	;				SUBMITTED:	03/12/14	to 03/13/14	
ATTN: Mr. Jeff Bo PHONE: (443) 80		X: (410) 266-8912			AQS SITE CODE: SITE CODE:		Honeywell Hex Chrome Study	
Description:	PAM-21		Lab ID: 4031210)-05		-	Sampled: 03/11/14 12:00	
Matrix:	Air		Sample Volume:	24	m³		Received: 03/12/14 11:16	
Comments:							Analysis Date: 03/13/14 16:00	
			Hexavalen	t Chro	omium			
			<u>Results</u>			MDL		
<u>Analyte</u>		CAS Numbe	er <u>ng/m³ Ai</u>	1	<u>Flag</u>	<u>ng/m³ Air</u>		
Hexavalent Chromium		1854-02-99	ND		U	0.0032		

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Environmental Resource	es Management, Inc		FILE #:	FILE #: 3926.00			
75 Valley Stream Parkw	vay, Suite 400		REPOR	REPORTED: 03/17/14 11:10			
Malvern, PA 19355			SUBMIT	TED: 03/12/14	to 03/13/14		
ATTN: Mr. Jeff Boggs PHONE: (443) 803-84	195 FAX: (410) 266-8	912	AQS SI CODE: SITE CO	_	Honeywell Hex Chrome Study		
Description: PAM-	-31	Lab ID: 403121	0-06		Sampled: 03/11/14 12:50		
Matrix: Air		Sample Volume:	24 m	3	Received: 03/12/14 11:16		
Comments:					Analysis Date: 03/13/14 16:10		
			nt Chromium				
		<u>Results</u>		MDL			
<u>Analyte</u>	CAS N	<u>umber ng/m³ Ai</u>	<u>r Flag</u>	<u>ng/m³ Air</u>	:		
Hexavalent Chromium	1854	-02-99 ND	U	0.0032			

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Environmental Resources Management, Inc						FILE #: 3926.00				
75 Valley Stream Parkway, Suite 400						REPORTED: 03/17/14 11:10				
Malvern, PA 19355						ED: 03/12/14	to 03/13/14			
ATTN: Mr. Jeff Boggs PHONE: (443) 803-8495 FAX: (410		X: (410) 266-8912			AQS SITE		Honeywell Hex Chrome Study			
Description:	OAM 1		Lab ID: 40313	01-01			Sampled: 03/12/14 11:26			
Matrix:	Air		Sample Volume:	21.2	9 m³		Received: 03/13/14 10:51			
Comments:							Analysis Date: 03/13/14 16:20			
Hexavalent Chromium										
			Results			<u>MDL</u>				
<u>Analyte</u>		CAS Numbe	<u>er ng/m³ A</u>	<u>ir</u>	<u>Flag</u>	<u>ng/m³ Air</u>				
Hexavalent Chromium	1	1854-02-99	0.0419			0.0036				

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Environmental Resources Management,	Inc	FILE #: 3926.00							
75 Valley Stream Parkway, Suite 400		REPORTED: 03/17/14 11:10							
Malvern, PA 19355		SUBMITTED: 03/12/14 to 03/13/14							
ATTN: Mr. Jeff Boggs PHONE: (443) 803-8495 FAX: (4-	10) 266-8912	AQS SITE SITE CODE: Honeywell Hex Chrome Study							
Description: OAM 2	Lab ID: 4031301-02	Sampled: 03/12/14 12:05							
Matrix: Air	Sample Volume: 21.3	.33 m ³ Received: 03/13/14 10:51							
Comments:		Analysis Date: 03/13/14 16:29							
Hexavalent Chromium <u>Results</u> <u>MDL</u>									
<u>Analyte</u> Hexavalent Chromium	<u>CAS Number</u> <u>ng/m³ Air</u> 1854-02-99 0.0659	Flag ng/m³ Air 0.0036							

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Environmental Resources Management, Inc						FILE #: 3926.00				
75 Valley Stream Parkway, Suite 400						REPORTED: 03/17/14 11:10			10	
Malvern, PA 19355						SUBMITT	SUBMITTED: 03/12/14 to 0		to 03/13/14	
ATTN: Mr. Jeff Boggs PHONE: (443) 803-8495 FAX: (410		0) 266-8912			AQS SITE CODE: SITE CODE:		Honeywell Hex Chrome Study			
Description:	PAM-1			Lab ID:	4031301	-03				Sampled: 03/12/14 10:27
Matrix:	Air			Sample Vo	olume:	21.41	l m³			Received: 03/13/14 10:51
Comments:	Col 1									Analysis Date: 03/13/14 16:59
Hexavalent Chromium										
					<u>Results</u>				<u>MDL</u>	
<u>Analyte</u>			<u>CAS Numbe</u>	<u>:r</u>	<u>ng/m³ Air</u>		<u>Flag</u>		<u>ng/m³ Air</u>	
Hexavalent Chromium		1854-02-99		0.0741				0.0036		

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N ER(Ĵ		CEF	RTIFIC	ATE C)F A	NALYSI	6			
Environmental Resources Management, Inc							FILE #: 3926.00				
75 Valley Stream	75 Valley Stream Parkway, Suite 400							REPORTED: 03/17/14 11:10			
Malvern, PA 1935	Malvern, PA 19355							03/12/14 to 03/13/14			
ATTN: Mr. Jeff Boggs PHONE: (443) 803-8495 FAX: (410) 266-8912							AQS SITE CODE: SITE CODE:		Honeywell Hex Chrome Study		
Description:	PAM-1D			Lab ID:	4031301	1-04			Sampled: 03/12/14 10:46		
Matrix:	Air			Sample V	olume:	21.38	m³		Received: 03/13/14 10:51		
Comments:	Col 2								Analysis Date: 03/13/14 17:19		
Hexavalent Chromium											
<u>Results</u>								MDL			
Analyte CAS Number ng/m³ Air				5	<u>Flag</u>	<u>ng/m³ Air</u>					
Hexavalent Chromium			1854-02-99	354-02-99 0.0771				0.0036			

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Page 12 of 16

Environmental Re	esources Man	ageme	nt, Inc				FILE #:	3926	3.00	
75 Valley Stream	Parkway, Suit	te 400					REPORT	ED:	03/17/14 11:	10
Malvern, PA 1935	5						SUBMIT	TED:	03/12/14	to 03/13/14
ATTN: Mr. Jeff B PHONE: (443) 8	3oggs 803-8495	FAX:	- (410) 266-8912				AQS SITI	_		Honeywell Hex Chrome Study
Description:	PAM-21			Lab ID:	4031301	L-05				Sampled: 03/12/14 11:29
Matrix:	Air			Sample V	olume:	21.29) m ³	1		Received: 03/13/14 10:51
Comments:										Analysis Date: 03/13/14 17:39
				н	lexavalen Results	t Chro	mium		MDL	
<u>Analyte</u>			CAS Numbe	<u>er</u>	<u>ng/m³ Aiı</u>	<u> </u>	<u>Flag</u>		<u>ng/m³ Air</u>	
Hexavalent Chromium			1854-02-99		ND		U		0.0036	

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Environmental Re	sources Mai	nagemei	nt, Inc				FILE #: 392	26.00		
75 Valley Stream I	Parkway, Su	ite 400					REPORTED:	03/17/14 11:	10	
Malvern, PA 1935	5						SUBMITTED:	03/12/14	to 03/13/14	
ATTN: Mr. Jeff B PHONE: (443) 8	oggs 803-8495	FAX:	(410) 266-8912				AQS SITE CODE: SITE CODE:	I	Honeywell Hex Chrome Study	
Description:	PAM-31			Lab ID:	403130	1-06			Sampled: 03/12/14 11:27	
Matrix:	Air			Sample V	olume:	21.29	m³		Received: 03/13/14 10:51	
Comments:									Analysis Date: 03/13/14 17:49	
				ŀ	łexavalen	nt Chro	mium			
					<u>Results</u>			MDL		
<u>Analyte</u>			CAS Numbe	<u>er</u>	<u>ng/m³ Ai</u>	r	<u>Flag</u>	<u>ng/m³ Air</u>		
Hexavalent Chromium			1854-02-99		ND		U	0.0036		

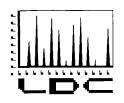
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LABORATORY DATA CONSULTANTS, INC.



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

ERM 5761 N. Church Street Glen Rock, PA 17327 ATTN: Mr. Jeff Boggs March 31, 2014

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

Dear Mr. Boggs,

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

LDC Project # 31501:

SDG

4031415/4031707

Hexavalent Chromium

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

Fraction

Sincerely,

Christina Rink Project Manager/Chemist

LDC Report# 31501A6_RV1

Laboratory Data Consultants, Inc. Data Validation Report

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

Sample Delivery Group (SDG): 4031415/4031707

Sample Identification

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

Introduction

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

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

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

The following are definitions of the data qualifiers:

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

I. Technical Holding Times

All technical holding time requirements were met.

II. Initial Calibration

All criteria for the initial calibration were met.

III. Calibration verification

Calibration verification frequency and analysis criteria were met.

IV. Blanks

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

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

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

V. Matrix Spike/Matrix Spike Duplicates

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

VI. Duplicates

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

VII. Laboratory Control Samples

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

VIII. Sample Result Verification

All sample result verifications were acceptable.

IX. Overall Assessment of Data

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

X. Field Duplicates

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

	Concentra	tion (ng/m³)			
Analyte	PAM-1 (03/13/14)	PAM-1D (03/13/14)	RPD (Limits)	Flags	A or P
Hexavalent chromium	0.0239	0.0197	19 (≤20)	-	-

	Concentra	ition (ng/m³)			
Analyte	PAM-1 (03/14/14)	PAM-1D (03/14/14)	RPD (Limits)	Flags	A or P
Hexavalent chromium	0.0218	0.0258	17 (≤20)	-	-

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

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

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

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

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

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

LDC #:<u>31501A6</u> SDG #:<u>4031415/4031707</u>

Laboratory: Eastern Research Group

VALIDA	TION COMPLETENESS WORKSHEET
/07	Level ∦′ √

Date: 3/19//L Page: __of __ Reviewer: ____ 2nd Reviewer: ____

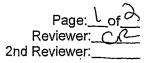
METHOD: Hexavalent Chromium (ASTM D7614)

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

	Validation Area						Commen	ts
I.	Technical holding times			A	Samplin	g dates: 3	13-14	/14
11	Initial calibration			A		· · · ·		•
111.	Calibration verification			NA.				
١٧	Blanks			A				
v	Matrix Spike/Matrix Spike D	uplica	les	N	Nota	equired		
<u>VI.</u>	Duplicates			L <u>A</u>				
VII.	Laboratory control samples		•	A	LC	S/D		
VIII	. Sample result verification			A	Rea	l'détect	S, ICAL, CO	AL, & batch QC.
IX.	Overall assessment of data			A		•		
Х.	Field duplicates			SW	<u>('</u>		,10)	
	Field blanks			MO	F13		115=(0,17
Note: Valida	A = Acceptable N = Not provided/applicable SW = See worksheet ted Samples:		R = Rins	o compound: sate ald blank	s detecte	TB = 1	uplicate Trip blank Equipment blank	
1	OAM 1 (03/13/14)	11	PAM-21 (03/1	4/14)	21		31	·
2	OAM 2 (03/13/14)	12	PAM-31 (03/1	4/14)	22		32	
3	PAM-1 (03/13/14)	13	PAM-1 (03/13	/14)DUP	23		33	
4	PAM-1D (03/13/14)	14	PAM-1D (03/1	3/14)DUP	24		34	
5	PAM-21 (03/13/14)	15	PAM-1 (03/14	/14)DUP	25	;	35	
6	PAM-31 (03/13/14)	16	PAM-1D (03/1	4/14)DUP	26		36	
7	OAM 1 (03/14/14)	17			27	,	37	
8	OAM 2 (03/14/14)	18		<u></u>	28		38	
9	PAM-1 (03/14/14)	19			29		39	
10	PAM-1D (03/14/14)	20	:		30		40	

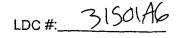
Notes:_

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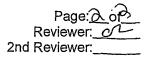


Method: Inorganics (EPA Method Secore)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	V			
Cooler temperature criteria was met.	\checkmark			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	V			
Were the proper number of standards used?	V			
Were all initial calibration correlation coefficients > 0.995?	V			
65-۱۱5% Were all initial and continuing calibration verification %Rs within the 9 9-110 % QC limits?				
Were titrant checks performed as required? (Level IV only)				
Were balance checks performed as required? (Level IV only)		 		ſ
III. Blanks				
Was a method blank associated with every sample in this SDG?	\checkmark			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		V		
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.	\checkmark			
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.			V	
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?	\checkmark			
Was an LCS analyzed per extraction batch?	\checkmark			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	~			
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?				
Were the performance evaluation (PE) samples within the acceptance limits?			/	



VALIDATION FINDINGS CHECKLIST



Validation Area	Yes	No	NA	Findings/Comments				
VII. Sample Result Verification								
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	1							
Were detection limits < RL?	\checkmark							
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.	\checkmark							
X. Field blanks								
Field blanks were identified in this SDG.	V							
Target analytes were detected in the field blanks.		\checkmark						

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LDC: 31501A6

VALIDATION FINDINGS WORKSHEET Field Duplicates

Page:_of__ Reviewer:_____ 2nd Reviewer:_____

Method: Inorganics (see cover)

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

	Concentra	tion (ng/m [*])	RPD		
Analyte	9	10	(≤ 20)	Qualifiers (Parents Only)	
Hexavalent Chromium	0.0218	0.0258	17		

\\LDCFILESERVER\Validation\FIELD DUPLICATES\FD_inorganic\31501A6.xlsx

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LDC #:_31501AG

Validation Findings Worksheet Initial and Continuing Calibration Calculation Verification

Page Reviewer 2nd Reviewer:

Method: Inorganics, Method <u>See Cover</u> The correlation coefficient (r) for the calibration of <u>C</u> was recalculated.Calibration date: <u>3/18/14</u>

Where,

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

%R = Found X 100

True

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. (mg/L)	Area	r or r ²	r or r ²	(Y/N)
Initial calibration		<u>s1</u>	0.1	0.0000175			
		<u>s2</u>	0.1	0.0000411	0.99992	0.99992	
	6t	<u>s3</u>	0.2	0.0000755			9
	$C^{\mathcal{D}}$	s4	0.5	0.0002007			(
	20	s5	1	0.0004224			
		s6	2	0.0008457			tt
Calibration verification		ICU .	0,5	0,520	104		
Calibration verification		CCJ		0,5449	109		
Callbration verification	X	Z		0.5588	112		\checkmark

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 #: 3150HAG

VALIDATION FINDINGS WORKSHEET Level IV Recalculation Worksheet

- 1	.1
Page:	of_/_
Reviewer.	92
2nd Reviewer:	

METHOD: Inorganics, Method ______

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

%R = <u>Found</u> x 100 Where, Found ≈ True

Found = 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). True = concentration of each analyte in the source.

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

RPD = <u>[S-D]</u> x 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	Reported. %R / RPD	Acceptable (Y/N)
LCS	Laboratory control sample	Clot	0482	0.463	104	104	4
N	Matrix spike sample		(SSR-SR)				
13	Duplicate sample	Got	0,0277	0.0739	15	15	4

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

312046 LDC #:

VALIDATION FINDINGS WORKSHEET Sample Calculation Verification

Page:_	of_	<u> </u>
Reviewer:	a2-	
2nd reviewer:		\leq

METHOD: Inorganics, Method ______

Rease see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A". $\frac{N}{N}$ Have results been reported and calculated correctly?

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<u>N N/A</u> N N/A

Are results within the calibrated range of the instruments?

Are all detection limits below the CRQL?

Compound (analyte) results for ______ recalculated and verified using the following equation: _reported with a positive detect were

Concentration = Twencept / 10

Recalculation: =0,02380 ng/m: 0,000 152+0,0000602 Onl

#	Sample ID	Analyte	Reported Concentration (Ng/M2)	Calculated Concentration (((((((((((((((((((Acceptable (Y/N)
	1	Get	0.0162	0.0161	
	7		00260	0.07.60	
	ß		0.0239	0.0238	
	4		0.0197	0.0197	
	7		0.0228	0.0228	
	<u> </u>		0.0251	0.0251	
	<u> </u>	· · · · · · · · · · · · · · · · · · ·	0.0218	0.0218	
	\Ò		0.0258	0.07.573	\checkmark
		· · · · · · · · · · · · · · · · · · ·			
		·			
	·····		······································		
		·			

Note:_

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CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc					FILE #: 3926.00			
75 Valley Stream	Parkway, Suite 4	00			REPORTED:	03/19/14 12:56		
Malvern, PA 1935	5				SUBMITTED:	03/14/14 to	03/17/14	
ATTN: Mr. Jeff B PHONE: (443) 8	oggs 303-8495 FA	X: (410) 266-8912			AQS SITE	Но	neywell Hex Chrome Study	
Description:	OAM 1		Lab ID: 4	031415-01			Sampled: 03/13/14 11:20	
Matrix:	Air		Sample Volum	ne: 21.3	m³		Received: 03/14/14 11:06	
Comments:						A	nalysis Date: 03/18/14 14:18	
	Hexavalent Chromium							
			Re	<u>sults</u>		MDL		
<u>Analyte</u>		CAS Num	<u>ng/</u>	<u>m³ Air</u>	<u>Flag</u>	<u>ng/m³ Air</u>		
Hexavalent Chromium	1	1854-02-9	9 0.0	0162		0.0036		

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02-3/19/14

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CERTIFICATE OF ANALYSIS

Environmental Resources Management, In	c	FILE #: 3926.00					
75 Valley Stream Parkway, Suite 400		REPORTED: 03/19/14 12:56					
Malvern, PA 19355		SUBMITTED: 03/14/14 to 03/17/14					
ATTN: Mr. Jeff Boggs PHONE: (443) 803-8495 FAX: (410)) 266-8912	AQS SITE CODE: Honeywell Hex Chrome Study					
Description: OAM 2	Lab ID: 4031415-02	Sampled: 03/13/14 12:16					
Matrix: Air	Sample Volume: 21.5	i8 m ³ Received: 03/14/14 11:06					
Comments:		Analysis Date: 03/18/14 14:27					
Hexavalent Chromium							
	<u>Results</u>	MDL					
Analyte	<u>CAS Number ng/m³ Air</u>	<u>Flag ng/m³ Air</u>					
Hexavalent Chromium	1854-02-99 0.0260	0.0036					

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CR23/19/14

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NERG

CERTIFICATE OF ANALYSIS

Environmental Re	sources Managemo	ent, Inc			FILE #: 39	926.00	
75 Valley Stream I	Parkway, Suite 400				REPORTED:	: 03/19/14 12:5	56
Malvern, PA 1935	5				SUBMITTED	: 03/14/14 to	03/17/14
ATTN: Mr. Jeff B PHONE: (443) 8		(410) 266-8912			AQS SITE CODE: SITE CODE:	F	loneywell Hex Chrome Study
Description:	PAM-1		Lab ID: 403141	L5-03			Sampled: 03/13/14 09:55
Matrix:	Air		Sample Volume:	20.94	⊦ m³		Received: 03/14/14 11:06
Comments:	Col 1						Analysis Date: 03/18/14 12:58
			Hexavale	nt Chro	mium		
			<u>Results</u>			MDL	
<u>Analyte</u>		CAS Numbe	er <u>ng/m³ A</u>	ir	Flag	<u>ng/m³ Air</u>	
Hexavalent Chromium		1854-02-99	0.0239			0.0036	

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Environmental Resources Management, Ir	nc	FILE #: 3926.00	
75 Valley Stream Parkway, Suite 400		REPORTED: 03/1	9/14 12:56
Malvern, PA 19355		SUBMITTED: 03	/14/14 to 03/17/14
ATTN: Mr. Jeff Boggs		AQS SITE	
PHONE: (443) 803-8495 FAX: (41)	0) 266-8912	SITECODE:	Honeywell Hex Chrome Study
Description: PAM-1D	Lab ID: 4031415-04		Sampled: 03/13/14 10:28
Matrix: Air	Sample Volume: 21.0	12 m³	Received: 03/14/14 11:06
Comments: Col 2			Analysis Date: 03/18/14 13:18
	Hexavalent Chro	omium	
	<u>Results</u>	<u> </u>	MDL
<u>Analyte</u>	<u>CAS Number ng/m³ Air</u>	<u>Flag ng/</u>	m ³ Air
Hexavalent Chromium	1854-02-99 0.0197	t	.0036

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Environmental Resources Management,	Inc	FILE #:	FILE #: 3926.00			
75 Valley Stream Parkway, Suite 400		REPORT	TED: 03/19/14 12:56			
Malvern, PA 19355		SUBMIT	TED: 03/14/14 to 03/17/14			
ATTN: Mr. Jeff Boggs PHONE: (443) 803-8495 FAX: (4	10) 266-8912	AQS SIT	-			
Description: PAM-21	Lab ID: 403	31415-05	Sampled: 03/13/14 11:19			
Matrix: Air	Sample Volume	e: 21.3 m ³	³ Received: 03/14/14 11:06			
Comments:			Analysis Date: 03/18/14 14:57			
Hexavalent Chromium Results MDL						
Analyte	CAS Number ng/m	<u>³ Air Flag</u>	<u>ng/m³ Air</u>			
Hexavalent Chromium	1854-02-99 ND	u c	0.0036			

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Environmental Resources Management, Inc					FILE #: 3926.00					
75 Valley Stream	Parkway, Suit	e 400					REPORTE	ED: 03	3/19/14 12	2:56
Malvern, PA 1935	5						SUBMITT	ED:	03/14/14	to 03/17/14
ATTN: Mr. Jeff B PHONE: (443) 8	00	FAX:	(410) 266-8912				AQS SITE	_		Honeywell Hex Chrome Study
Description:	PAM-31		<u> </u>	Lab ID:	4031415	5-06				Sampled: 03/13/14 11:21
Matrix:	Air			Sample Vo	olume:	21.3	m³			Received: 03/14/14 11:06
Comments:										Analysis Date: 03/18/14 15:07
Hexavalent Chromium <u>Results</u> <u>MDL</u>										
<u>Analyte</u>			CAS Numbe	er .	<u>ng/m³ Air</u>		<u>Flag</u>	Ī	<u>ng/m³ Air</u>	
Hexavalent Chromium			1854-02-99		ND		U		0.0036	

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Environmental Resources Management,	Inc	FILE #: 3926.00		
75 Valley Stream Parkway, Suite 400			REPORTED:	03/19/14 12:56
Malvern, PA 19355			SUBMITTED:	03/14/14 to 03/17/14
ATTN: Mr. Jeff Boggs PHONE: (443) 803-8495 FAX: (4	10) 266-8912		AQS SITE CODE: SITE CODE:	Honeywell Hex Chrome Study
Description: OAM 1	Lab ID:	4031707-01	_	Sampled: 03/14/14 11:03
Matrix: Air	Sample Ve	olume: 20.98	8 m³	Received: 03/17/14 10:28
Comments:				Analysis Date: 03/18/14 15:17
	н	iexavalent Chro	mium	
		<u>Results</u>		MDL
Analyte	CAS Number	<u>ng/m³ Air</u>	Flag	ng/m³ Air
Hexavalent Chromium	1854-02-99	0.0228		0.0036

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Environmental Resources Management, Ir	0	FILE #: 3926.00	
75 Valley Stream Parkway, Suite 400		REPORTED: 03/19/14 12:56	
Malvern, PA 19355		SUBMITTED: 03/14/14 to 03/17/14	
ATTN: Mr. Jeff Boggs PHONE: (443) 803-8495 FAX: (41	0) 266-8912	AQS SITE SITE CODE: Honeywell Hex Chrome Study	
Description: OAM 2	Lab ID: 4031707-02	Sampled: 03/14/14 11:55	—
Matrix: Air	Sample Volume: 21.0	.08 m ³ Received: 03/17/14 10:28	
Comments:		Analysis Date: 03/18/14 15:57	
	Hexavalent Chro	romium	
	Results	MDL	
Analyte	CAS Number ng/m³ Air	<u>Flag ng/m³ Air</u>	
Hexavalent Chromium	1854-02 -9 9 0.0251	0.0036	

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Environmental Resour	rces Management, In	nc		FILE #: 3926	5.00
75 Valley Stream Park	kway, Suite 400			REPORTED:	03/19/14 12:56
Malvern, PA 19355				SUBMITTED:	03/14/14 to 03/17/14
ATTN: Mr. Jeff Boggs	s			AQS SITE	
PHONE: (443) 803-8	8495 FAX: (410	0) 266-8912		SITE CODE:	Honeywell Hex Chrome Study
Description: PAI	M-1	Lab ID;	4031707-03		Sampled: 03/14/14 09:57
Matrix: Air		Sample V	/olume: 21.3	3 m³	Received: 03/17/14 10:28
Comments: Col	11				Analysis Date: 03/18/14 13:38
		I	Hexavalent Chro	mium	
			<u>Results</u>		MDL
<u>Analyte</u>		CAS Number	<u>ng/m³ Air</u>	<u>Flag</u>	<u>ng/m³ Air</u>
Hexavalent Chromium		1854-02-99	0.0218		0.0036

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Environmental Re	sources Manage	ement, Inc		FILE #: 39	926.00
75 Valley Stream I	Parkway, Suite 4	00		REPORTED:	: 03/19/14 12:56
Malvern, PA 1935	5			SUBMITTED:	: 03/14/14 to 03/17/14
ATTN: Mr. Jeff B PHONE: (443) 8		X : (410) 266-8912		AQS SITE CODE: SITE CODE:	Honeywell Hex Chrome Study
Description:	PAM-1D		Lab ID: 4031707-04	1	Sampled: 03/14/14 10:16
Matrix:	Air		Sample Volume: 2	21.16 m³	Received: 03/17/14 10:28
Comments:	Col 2				Analysis Date: 03/18/14 13:57
			Hexavalent C	hromium	
			<u>Results</u>		<u>MDL</u>
<u>Analyte</u>		CAS Numbe	er <u>ng/m³ Air</u>	<u>Flag</u>	<u>ng/m³ Air</u>
Hexavalent Chromium		1854-02-99	0.0258		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.

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Environmental Resources Management, I	nc	FILE	#: 3926.00	
75 Valley Stream Parkway, Suite 400		REP	ORTED: 03/19/14 1	2:56
Malvern, PA 19355		SUB	MITTED: 03/14/14	to 03/17/14
ATTN: Mr. Jeff Boggs PHONE: (443) 803-8495 FAX: (4*	0) 266-8912	aqs Sod	SITE E CODE:	Honeywell Hex Chrome Study
Description: PAM-21	Lab ID:	4031707-05		Sampled: 03/14/14 10:59
Matrix: Air	Sample Volu	ume: 20.98	m³	Received: 03/17/14 10:28
Comments:				Analysis Date: 03/18/14 15:37
		xavalent Chromiun <u>Results</u>	n <u>MDL</u>	
Analyte	CAS Number no	g/m³ Air <u>Fl</u>	ag <u>ng/m³ Air</u>	
Hexavalent Chromium	1854-02-99	ND	u 0.0036	

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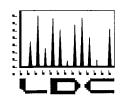
Environmental Resources Manageme	ent, Inc	FILE #:	3926.00	
75 Valley Stream Parkway, Suite 400		REPORT	ED: 03/19/14 12:56	
Malvern, PA 19355		SUBMIT	red: 03/14/14 to 03	//17/14
ATTN: Mr. Jeff Boggs		AQS SIT	-	
PHONE: (443) 803-8495 FAX:	(410) 266-8912	SITECO	DE: Hone	eywell Hex Chrome Study
Description: PAM-31	Lab ID: 40)31707-06	_	Sampled: 03/14/14 11:04
Matrix: Air	Sample Volum	e: 2 0.98 m ³	I	Received: 03/17/14 10:28
Comments:			Ana	lysis Date: 03/18/14 15:47
	Hexav	valent Chromium		
	Res	ults	MDL	
Analyte	CAS Number ng/n	<u>n³ Air</u> <u>Flag</u>	<u>ng/m³ Air</u>	
Hexavalent Chromium	1854-02-99 N	ID U	0.0036	

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LABORATORY DATA CONSULTANTS, INC.



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

March 31, 2014

ERM 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 fraction listed below. Please replace the previously submitted report with the enclosed revised report.

LDC Project # 31535:

<u>SDG</u>	Fraction
4031920/4032021	Hexavalent Chromium

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

Sincerely,

Christina Rink Project Manager/Chemist

LDC Report# 31535A6_RV1

Laboratory Data Consultants, Inc. Data Validation Report

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

Sample Delivery Group (SDG): 4031920/4032021

Sample Identification

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

Introduction

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

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

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

The following are definitions of the data qualifiers:

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

I. Technical Holding Times

All technical holding time requirements were met.

II. Initial Calibration

All criteria for the initial calibration were met.

III. Calibration verification

Calibration verification frequency and analysis criteria were met.

IV. Blanks

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

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

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

V. Matrix Spike/Matrix Spike Duplicates

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

VI. Duplicates

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

VII. Laboratory Control Samples

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

VIII. Sample Result Verification

All sample result verifications were acceptable.

IX. Overall Assessment of Data

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

X. Field Duplicates

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

	Concentra	ation (ng/m³)				
Analyte	PAM-1 (03/18/14)	PAM-1D (03/18/ <u>1</u> 4)	RPD (Limits)	Flags	A or P	
Hexavalent chromium	0.0393	0.0374	5 (≤20)	-	-	

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

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

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

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

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

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

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

LDC #:	31535A6
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LDC #:_	<u>31535</u> A6	VALIDATION COMPLETENESS WORKSHEET
SDG #:	4031920/4032021	Level # V
Laborato	ory: Eastern Research	

чЛI Date Page: Reviewer 2nd Reviewer:

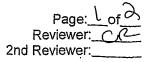
METHOD: Hexavalent Chromium (ASTM D7614)

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

	Validation	n Area	1				<u>_</u>	omments		
1.	Technical holding times			A	Sampling of	lates:	3/18	1-19	/14	
11	Initial calibration			MA					/ • •	
<u> </u>	Calibration verification			NA						
IV	Blanks	·		A						
<u> </u>	Matrix Spike/Matrix Spike	Duplica	tes	\mathbb{N}	Not	lari	red			
VI	Duplicates			A	DU					
	Laboratory control samples			A	LC	S/D)		· · · · · · · · · · · · · · · · · · ·	
	. Sample result verification			AT	TCAL	., CCAL	Deree	ts +b	atch QC reco	skilad
iX.	Overall assessment of data	l		A		<u> </u>		<u>`</u>		
X .	Field duplicates			SW	(3, '	$\frac{1}{1}$	<u>(9,10</u>	<u>)</u>		
L XI	Field blanks			NO	FB	= 51	<u> </u>	<u>7B=</u>	6,12	
Note: Valida	A = Acceptable N = Not provided/applicable SW = See worksheet ated Samples:	e	R = Rin:	o compounds sate eld blank	s detected	TE	= Duplicate 3 = Trip blank 3 = Equipmer			
1	OAM 1 (03/18/14)	11	PAM-21 (03/1	9/14)	21		-	31		
2	OAM 2 (03/18/14)	12	PAM-31 (03/1	9/14)	22			32		
3	PAM-1 (03/18/14)	13	PAM-1 (03/18	/14)DUP	23			33		
4	PAM-1D (03/18/14)	14	PAM-1D (03/1	8/14)DUP	24			34		
5	PAM-21 (03/18/14)	15	PAM-1 (03/19	/14)DUP	25			35		
6	PAM-21 (03/18/14)	16	PAM-1D (03/1	9/14)DUP	26			36		
7	OAM 1 (03/19/14)	17			27			37		
8	OAM 2 (03/19/14)	18			28			38		
9	PAM-1 (03/19/14)	19			29			39		
10	PAM-1D (03/19/14)	20			30			40		

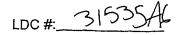
Notes:

LDC #: 31535A6



Method: Inorganics (EPA Method Second)

Validation Area	Yes	No	NA	Findings/Comments			
I. Technical holding times							
All technical holding times were met.	V						
Cooler temperature criteria was met.							
II. Calibration							
Were all instruments calibrated daily, each set-up time?	V						
Were the proper number of standards used?	V						
Were all initial calibration correlation coefficients > 0.995?	V	·					
۲۶-۱۱۶% 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)			レ				
III. Blanks							
Was a method blank associated with every sample in this SDG?	V						
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		V					
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.	\checkmark						
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.			V				
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?	\sim						
Was an LCS analyzed per extraction batch?	\checkmark						
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	<						
VI. Regional Quality Assurance and Quality Control							
Were performance evaluation (PE) samples performed?							
Were the performance evaluation (PE) samples within the acceptance limits?			/				



VALIDATION FINDINGS CHECKLIST

Validation Area	Yes	No	NA	Findings/Comments
VII. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	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.	\checkmark			
X. Field blanks				
Field blanks were identified in this SDG.	V			
Target analytes were detected in the field blanks.		\checkmark		

VALIDATION FINDINGS WORKSHEET Field Duplicates

Page: of ______ Reviewer: ______ 2nd Reviewer: ______

Method: Inorganics (see cover)

	Concentral	tion (ng/m [*])	RPD		
Analyte	3 4		(≤ 20)	Qualifiers (Parents Only)	
Hexavalent Chromium	0.0393	0.0374	5		

	Concentrat	ion (ng/m°)	RPD		
Analyte	9	10	(≤ 20)	Qualifiers (Parents Only)	
Hexavalent Chromium	0.0224	0.0247	10		

LDC #: 31535A6

Validation Findings Worksheet Initial and Continuing Calibration Calculation Verification

Page: **Reviewer:** 2nd Reviewer:

Method: Inorganics, Method <u>See Cover</u>

The correlation coefficient (r) for the calibration of 2^{4} was recalculated. Calibration date: 3/21/14

Where,

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

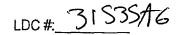
%R = Found X 100

True

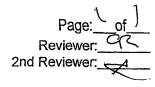
Found = concentration of each analyte <u>measured</u> in the analysis of the ICV or CCV solution True = concentration of each analyte in the ICV or CCV source

						Recalculated	Reported	Acceptable
Type of analysis	۲A	nalyte	Standard	Conc. (mg/L)	Area	r or r ²	r or r ²	(Y/N)
Initial calibration			s1	0.1	0.0000217			
	C, or		s2	0.1	0.0000442	0.99998	0.99998	
			s3	0.2	0.0000934			
			s4	0.5	0.0002315			Y I
			s5	1	0.0004766			
			s6	2	0.0009579			
Calibration verification			ICV	10305	OSIYU	103		
Calibration verification	/		CCV	losa	0.5238	105	-	d
Calibration verification			-					

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



VALIDATION FINDINGS WORKSHEET Level IV Recalculation Worksheet



METHOD: Inorganics, Method ______

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

 %R = Found_x 100
 Where,
 Found =
 concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, True

 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 = <u> S-D </u> x 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	Acceptable (Y/N)
LCS	Laboratory control sample	C. ^{6†}	0,478	0.463	103	103	7
N	Matrix spike sample		(SSR-SR)				
13	Duplicate sample	Cot	0,0476	0.463	0.3	03	4

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

LDC	LDC #: 3153546 VALIDATION FINDINGS WORKSHEET Sample Calculation Verification Reviewer: 02 2nd reviewer: 6											
MET	HOD: Inorganics, Metho	d <u>See cover</u>										
<u>N N</u>	N/A Have results	ow for all questions ans been reported and calc vithin the calibrated rang tion limits below the CR	culated correctly? ge of the instrum QL?	?	e identified as "N/	Ά".						
Comp recald	bound (analyte) results f culated and verified usin	for g the following equation	<u> </u>	rep	orted with a positi	ve detect were						
Concei	ntration = - A rea-Interc	rept upl Rec	alculation:	0.0004806	0000-116 X	10ml						
ч 0	-Area-Interc Sbpc	(A:(Vol))		0.0004806		20,77,73-						
, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					00	10779mg/						
#	Sample ID	Analy	te	Reported Concentration (12 w>)	Calculated Concentration	Acceptable (Y/N)						
	1		Crot	0.0135	0.0134	4						
	2			0.0148	0.0147							
 				p.0395	0.0393							
				0.0374	0,0373							
 				<u> </u>	0,0108	<u> </u>						
				00124	C MY P							
				-100c1	UNUTI	X						
 												
		**										
			·····									
	<u> </u>											
Note:_												

Environmental Resou	nvironmental Resources Management, Inc							
75 Valley Stream Par	rkway, Suite 400			REPORTED:	REPORTED: 03/24/14 14:54			
Malvern, PA 19355				SUBMITTED:	03/19/14 1	0 03/20/14		
ATTN: Mr. Jeff Bogg PHONE: (443) 803-	0	(410) 266-8912		AQS SITE CODE: SITE CODE:	I	Honeywell Hex Chrome Study		
Description: 0/	AM 1		Lab ID: 4031920-01			Sampled: 03/18/14 11:14		
Matrix: Ai	r		Sample Volume: 21	1.18 m³		Received: 03/19/14 12:30		
Comments:						Analysis Date: 03/21/14 13:57		
			Hexavalent Ch	nromium				
			<u>Results</u>		MDL			
Analyte		CAS Numbe	er <u>ng/m³ Air</u>	Flag	<u>ng/m³ Air</u>			
Hexavalent Chromium		1854-02-99	0.0135		0.0036			

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023/24/14

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Environmental Re	Environmental Resources Management, Inc					FILE #: 3926.00			
75 Valley Stream	Parkway, Suite	400		R	REPORTED: 03/24/14 14:54				
Malvern, PA 1938	55			S	UBMITTED:	03/19/14 to	03/20/14		
ATTN: Mr. Jeff E PHONE: (443)		4X: (410) 266-8912			QS SITE ODE: ITE CODE:	Н	oneywell Hex Chrome Study		
Description:	OAM 2		Lab ID: 4031920	-02			Sampled: 03/18/14 11:48		
Matrix:	Air		Sample Volume:	21	m³		Received: 03/19/14 12:30		
Comments:							Analysis Date: 03/21/14 14:07		
			Hexavalent	: Chrom	ium				
			<u>Results</u>			MDL			
<u>Analyte</u>		CAS Numbe	<u>er ng/m³ Air</u>		<u>Flag</u>	<u>ng/m³ Air</u>			
Hexavalent Chromiun	n	1854-02-99	0.0148			0.0036			

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Environmental Re	Environmental Resources Management, Inc					FILE #: 3926.00			
75 Valley Stream	Parkway, Suite 4	400			REPORT	REPORTED: 03/24/14 14:54			
Malvern, PA 19355				SUBMITT	SUBMITTED: 03/19/14 to 03/20/14				
ATTN: Mr. Jeff E PHONE: (443)	00	AX: (410) 266-8912			AQS SITE		Honeywell Hex Chrome Study		
Description:	PAM-1	<u></u>	Lab ID:	4031920-03			Sampled: 03/18/14 10:29		
Matrix:	Air		Sample Volu	me: 21.	85 m³		Received: 03/19/14 12:30		
Comments:	Col 1						Analysis Date: 03/21/14 14:17		
			Hex	avalent Chi	romium				
			<u>R</u> (esults		<u>MDI</u>			
<u>Analyte</u>		CAS Numbe	er ng	<u>/m³ Air</u>	<u>Flaq</u>	<u>ng/m³</u>	Air		
Hexavalent Chromiun	n	1854-02-99	C	.0393		0.003	5		

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Environmental Re	Environmental Resources Management, Inc				FILE #: 3926.00			
75 Valley Stream	Parkway, Suite 400)		REPORTED:	REPORTED: 03/24/14 14:54			
Malvern, PA 1935	5			SUBMITTED:	03/19/14 t	o 03/20/14		
ATTN: Mr. Jeff E	Boggs			AQS SITE				
PHONE: (443) 8	303-8495 FAX:	(410) 266-8912		SITE CODE:	ŀ	Ioneywell Hex Chrome Study		
Description:	PAM-1D		Lab ID: 4031920-04			Sampled: 03/18/14 10:46		
Matrix:	Air		Sample Volume: 21	.65 m³		Received: 03/19/14 12:30		
Comments:	Col 2					Analysis Date: 03/21/14 14:36		
			Hexavalent Ch	romium				
			Results		<u>MDL</u>			
<u>Analyte</u>		<u>CAS Numbe</u>	er <u>ng/m³ Air</u>	Flag	<u>ng/m³ Air</u>			
Hexavalent Chromium	ı	1854-02-99	0.0374		0.0036			

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Environmental Re	Environmental Resources Management, Inc					FILE #: 3926.00			
75 Valley Stream	Parkway, Suite	400		REI	REPORTED: 03/24/14 14:54				
Malvern, PA 193		SU	BMITTED:	03/19/14	to 03/20/14				
ATTN: Mr. Jeff I PHONE: (443)	00	AX: (410) 266-8912			S SITE	I	Honeywell Hex Chrome Study		
Description:	PAM-21		Lab ID: 403192	20-05			Sampled: 03/18/14 11:15		
Matrix:	Air		Sample Volume:	21.18	m³		Received: 03/19/14 12:30		
Comments:							Analysis Date: 03/21/14 14:56		
			Hexavale	nt Chromiu	m				
			<u>Results</u>			MDL			
<u>Analyte</u>		CAS Numbe	er <u>ng/m³ A</u>	<u>ir</u>	lag	<u>ng/m³ Air</u>			
Hexavalent Chromium		1854-02-99	ND		U	0.0036			

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Environmental Re	Environmental Resources Management, Inc						FILE #: 3926.00			
75 Valley Stream	ı Parkway, S	uite 400					REPORTED: 03/24/14 14:54			
Malvern, PA 19355					SUBMITTED: 03/19/14 to 03/20/14			to 03/20/14		
ATTN: Mr. Jeff B PHONE: (443)	Boggs 803-8495	FAX:	(410) 266-8912				AQS SITE	_		Honeywell Hex Chrome Study
Description:	PAM-31		3	Lab ID:	403192	0-06			<u>,,,,</u> ,	Sampled: 03/18/14 11:13
Matrix:	Air			Sample V	olume:	21.1	8 m³			Received: 03/19/14 12:30
Comments:										Analysis Date: 03/21/14 15:06
				н	lexavaler	nt Chro	omium			
					<u>Results</u>				MDL	
<u>Analyte</u>			CAS Numb	<u>er</u>	<u>ng/m³ Ai</u>	<u>r</u>	<u>Flag</u>		<u>ng/m³ Air</u>	
Hexavalent Chromium			1854-02-99		ND		U		0.0036	

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Environmental Re	ent, Inc			FILE #: 3926.00			
75 Valley Stream I	Parkway, Suite 400)			REPORTED:	03/24/14 14:	54
Malvern, PA 1935	5				SUBMITTED:	03/19/14	to 03/20/14
ATTN: Mr. Jeff B PHONE: (443) 8		(410) 266-8912			AQS SITE CODE: SITECODE:		Honeywell Hex Chrome Study
Description:	OAM 1		Lab ID: 4032021	L-01			Sampled: 03/19/14 10:27
Matrix:	Air		Sample Volume:	20.77	7 m³		Received: 03/20/14 11:28
Comments:							Analysis Date: 03/21/14 16:55
			Hexavalen	t Chro	mium		
			<u>Results</u>			<u>MDL</u>	
<u>Analyte</u>		CAS Numbe	er <u>ng/m³ Air</u>		<u>Flag</u>	<u>ng/m³ Air</u>	
Hexavalent Chromium	I	1854-02-99	0.0108			0.0036	

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Environmental Resources Management, Inc							FILE #: 3926.00				
75 Valley Stream	ı Parkway, Suite	e 400					REPORT	ED:	03/24/14 14:	54	
Malvern, PA 193	55						SUBMITT	ED:	03/19/14	to 03/20/14	
ATTN: Mr. Jeff B PHONE: (443)	00	AX:	(410) 266-8912				AQS SITE		1	Honeywell Hex Chrome Study	
Description:	OAM 2			Lab ID:	403202	21-02				Sampled: 03/19/14 11:10	
Matrix:	Air			Sample \	Volume:	20.8	m³			Received: 03/20/14 11:28	
Comments:										Analysis Date: 03/21/14 15:26	
					Hexavale	nt Chro	mium				
					<u>Results</u>				<u>MDL</u>		
<u>Analyte</u>			CAS Numbe	er	<u>ng/m³ A</u> i	ir	<u>Flag</u>		<u>ng/m³ Air</u>		
Hexavalent Chromium			1854-02-99		ND		U		0.0036		

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Environmental Resources Management, Inc						FILE #: 3926.00				
75 Valley Stream	Parkway, Suite 400				REPORTE	D: 03/24/14 14	ł:54			
Malvern, PA 1935	55				SUBMITTE	E D: 03/19/14	to 03/20/14			
ATTN: Mr. Jeff E PHONE: (443) 8		(410) 266-8912			AQS SITE		Honeywell Hex Chrome Study			
Description:	PAM-1		Lab ID: 4032021	-03			Sampled: 03/19/14 09:45			
Matrix:	Air		Sample Volume:	20.76	5 m ³		Received: 03/20/14 11:28			
Comments:	Col 1						Analysis Date: 03/21/14 15:56			
			Hexavalent	t Chro	mium					
			<u>Results</u>			MDL				
<u>Analyte</u>		<u>CAS Numbe</u>	<u>r ng/m³ Air</u>		<u>Flag</u>	<u>ng/m³ Air</u>				
Hexavalent Chromium	1	1854-02-99	0.0224			0.0036				

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Environmental Re	esources Managem	ent, Inc		FILE #: 3926.00			
75 Valley Stream	Parkway, Suite 40	D		REPORTED:	03/24/14 14:54	1	
Malvern, PA 1935	55			SUBMITTED:	03/19/14 to	03/20/14	
ATTN: Mr. Jeff E PHONE: (443)	3oggs 803-8495 FAX	(410) 266-8912		AQS SITE	На	pneywell Hex Chrome Study	
Description:	PAM-1D		Lab ID: 4032021-04			Sampled: 03/19/14 10:00	
Matrix:	Air	5	Sample Volume: 20.7	′5 m³		Received: 03/20/14 11:28	
Comments:	Col 2				A	nalysis Date: 03/21/14 16:16	
			Hexavalent Chro	omium			
			<u>Results</u>		MDL		
<u>Analyte</u>		CAS Number	<u>ng/m³ Air</u>	Flag	<u>ng/m³ Air</u>		
Hexavalent Chromiun	n	1854-02-99	0.0247		0.0036		

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Environmental Re	esources Manageme	nt, Inc	FILE #:	FILE #: 3926.00			
75 Valley Stream	Parkway, Suite 400			REPORTE	D: 03/24/14 14	54	
Malvern, PA 1935	55			SUBMITTI	ED: 03/19/14	to 03/20/14	
ATTN: Mr. Jeff E	00	(440) 000 0040		AQS SITE CODE: SITE COD			
PHONE: (443)	803-8495 FAX:	(410) 266-8912		SITE COD)E:	Honeywell Hex Chrome Study	
Description:	PAM-21	Lab	ID: 4032021-05	5		Sampled: 03/19/14 10:26	
Matrix:	Air	Sam	ple Volume: 2	20.77 m ³		Received: 03/20/14 11:28	
Comments:						Analysis Date: 03/21/14 16:35	
			Hexavalent C	Chromium			
			<u>Results</u>		<u>MDL</u>		
<u>Analyte</u>		CAS Number	<u>ng/m³ Air</u>	<u>Flag</u>	<u>ng/m³ Air</u>		
Hexavalent Chromium		1854-02-99	ND	U	0.0036		

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<u>C2-3124/14</u> Page 13 of 16

Environmental Resources Management, Inc						FILE #: 3926.00			
75 Valley Stream	Parkway, Suite 40	0				REPORT	ED: 03/2	24/14 14	I:54
Malvern, PA 1935	55					SUBMITT	ED: 03	3/19/14	to 03/20/14
ATTN: Mr. Jeff E PHONE: (443) 8		: (410) 266-8912				AQS SITE			Honeywell Hex Chrome Study
Description:	PAM-31		Lab ID:	4032021	-06		~ ~		Sampled: 03/19/14 11:28
Matrix:	Air		Sample Vo	lume:	20.77	7 m³			Received: 03/20/14 11:28
Comments:									Analysis Date: 03/21/14 16:45
			H	exavalen	t Chro	mium			
				<u>Results</u>				<u>MDL</u>	
<u>Analyte</u>		CAS Numb	er !	ng/m³_Air		<u>Flag</u>	ng	<u>/m³ Air</u>	
Hexavalent Chromium		1854-02-99		ND		U		0.0036	

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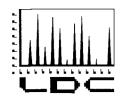
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LABORATORY DATA CONSULTANTS, INC.



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

March 31, 2014

ERM 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 fraction listed below. Please replace the previously submitted report with the enclosed revised report.

LDC Project # 31539:

SDGFraction4032112/4032411Hexavalent Chromium

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

Sincerely,

Christina Rink Project Manager/Chemist

LDC Report# 31539A6_RV1

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:	Harbor Point, MD, Hexavalent Chromium Monitoring
Collection Date:	March 20 through March 21, 2014
LDC Report Date:	March 31, 2014
Matrix:	Air
Parameters:	Hexavalent Chromium
Validation Level:	EPA Level IV
Laboratory:	Eastern Research Group
	100011011000111

Sample Delivery Group (SDG): 4032112/4032411

Sample Identification

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

Introduction

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

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

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

The following are definitions of the data qualifiers:

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

I. Technical Holding Times

All technical holding time requirements were met.

II. Initial Calibration

All criteria for the initial calibration were met.

III. Calibration verification

Calibration verification frequency and analysis criteria were met.

IV. Blanks

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

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

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

V. Matrix Spike/Matrix Spike Duplicates

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

VI. Duplicates

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

VII. Laboratory Control Samples

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

VIII. Sample Result Verification

All sample result verifications were acceptable.

IX. Overall Assessment of Data

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

X. Field Duplicates

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

	Concentra	ation (ng/m³)				
Analyte	PAM-1 (03/20/14)	PAM-1D (03/20/14)	RPD (Limits)	Flags	A or P	
Hexavalent chromium	0.0355	0.0298	17 (≤20)	-	-	

	Concentra	ntion (ng/m³)			
Analyte	PAM-1 (03/21/14)	PAM-1D (03/21/14)	RPD (Limits)	Flags	A or P
Hexavalent chromium	0.0136	0.0113	18 (≤20)	-	-

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

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

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

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

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

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

LDC #: 31539A6

SDG #: 4032112/4032411 Laboratory: Eastern Research Group

Date Page: Reviewer: 2nd Reviewer:

METHOD: Hexavalent Chromium (ASTM D7614)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 3/20-21/19
11	Initial calibration	TAN .	
111.	Calibration verification	A	
IV	Blanks	A	
v	Matrix Spike/Matrix Spike Duplicates	N	Not required
VI.	Duplicates	A	QP.
VII.	Laboratory control samples	A	LCS/D
VIII.	Sample result verification	, NY	Detects, JOAL, OCAL, & batch QK recalculate
IX.	Overall assessment of data	A	
Х.	Field duplicates	SW	(3,4) (9,10)
XI	Field blanks	NQ	FB=5,11 TB=G,12
Note:		No compounds	s detected D = Duplicate

N = Not provided/applicable SW = See worksheet

ASC

R = Rinsate

FB = Field blank

TB = Trip blank

Validated Samples:

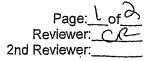
1	OAM 1 (03/20/14)	11	PAM-21 (03/21/14)	21	31
2	OAM 2 (03/20/14)	12	PAM-31 (03/21/14)	22	32
3	PAM-1 (03/20/14)	13	PAM-1 (03/20/14)DUP	23	33
4	PAM-1D (03/20/14)	14	PAM-1D (03/20/14)DUP	24	34
5	PAM-21 (03/20/14)	15	PAM-1 (03/21/14)DUP	25	35
6	PAM-31 (03/20/14)	16	PAM-1D (03/21/14)DUP	26	36
7	OAM 1 (03/21/14)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

Notes:

EB = Equipment blank

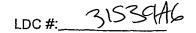
LDC #: 31539[AG

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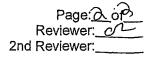


Method: Inorganics (EPA Method Second)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	V			
Cooler temperature criteria was met.	\checkmark			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	V			
Were the proper number of standards used?	V			
Were all initial calibration correlation coefficients > 0.995?	V			
65-115% Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	V			
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?	\checkmark			·
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		V		
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.			V	
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?	\checkmark			
Was an LCS analyzed per extraction batch?	\checkmark			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	~			
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		/		
Were the performance evaluation (PE) samples within the acceptance limits?				



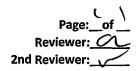
VALIDATION FINDINGS CHECKLIST



Validation Area	Yes	No	NA	Findings/Comments					
VII. Sample Result Verification									
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	1								
Were detection limits < RL?	~								
VIII. Overall assessment of data									
Overall assessment of data was found to be acceptable.		F							
IX. Field duplicates									
Field duplicate pairs were identified in this SDG.									
Target analytes were detected in the field duplicates.	\checkmark								
X. Field blanks									
Field blanks were identified in this SDG.	V								
Target analytes were detected in the field blanks.		~							

,

VALIDATION FINDINGS WORKSHEET Field Duplicates



Method: Inorganics (see cover)

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Anakia	Concentra	tion (ng/m°)	RPD	Qualifiers (Parents Only)	
Analyte	3	4	(≤ 20)		
Hexavalent Chromium	0.0355	0.0298	17		

	Concentra	tion (ng/m [*])	RPD		
Analyte	9 10		(≤ 20)	Qualifiers (Parents Only)	
Hexavalent Chromium	0.0136	0.0113	18		



LDC #: 3153946

Validation Findings Worksheet Initial and Continuing Calibration Calculation Verification

Page: Reviewer: 2nd Reviewer:

Method: Inorganics, Method <u>See Cover</u>

The correlation coefficient (r) for the calibration of \underline{CC} was recalculated. Calibration date: 3/24/14

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

%R = Found X 100_

True

Where,

.

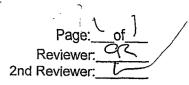
Found = concentration of each analyte <u>measured</u> in the analysis of the ICV or CCV solution True = concentration of each analyte in the ICV or CCV source

						Recalculated	Reported	Acceptable
Type of analysis	Anal	yte	Standard	Conc. (mg/L)	Area	r or r ²	r or r ²	(Y/N)
Initial calibration			s1	0.1	0.0000231			
			s2	0.1	0.0000462	0.99996	0.99996	1.2
	<u> </u>	r	s3	0.2	0.0000841			7
	C ^{6'}		s4	0.5	0.0002181			(
			<u>s5</u>	1	0.000447			
			s6	2	0.0008908			
Calibration verification			TC1	0.5	0,5477	110		
Calibration verification			CCV		0,5598	112	<u> </u>	
Calibration verification			Y	X	0.5699	11-1	<u>у</u>	$\mathbf{+}$

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

LDC # 31539A6

VALIDATION FINDINGS WORKSHEET Level IV Recalculation Worksheet



METHOD: Inorganics, Method ______

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

 %R = Found_x 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 = <u>IS-DI</u> x 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	Reported.	Acceptable (Y/N)
LCS		Get	0,484	0,463	102	107	\sim
Ņ	Matrix spike sample		(SSR-SR)				
13	Duplicate sample	C(^{6†}	0.0397	0.0355	11.7	11,2	7

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

LDC #: 3153946

VALIDATION FINDINGS WORKSHEET Sample Calculation Verification

Page:	of
Reviewer:	a-,
2nd reviewer:	5

reported with a positive detect were

METHOD: Inorganics, Method Sel cover

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

-64

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

Compound (analyte) results for recalculated and verified using the following equation:

N_N/A

N_N/A

Area - Intercept (Vo Slope (Air

recalc	ulated and verified usir	ng the following eq	luation:				
Concer	a - Intercept (F	Vol Dic Vol	Recalculation:	0,0	<u>5 +0.00000</u> 2004461	138 (10ml 21.41 0,0	
#	Sample ID		Analyte		Reported Concentration (f\@(m ²)	Calculated Concentration (Net m ³)	Acceptable (Y/N)
	ľ		C^{6^+}	·	0.0124	0.0124	4
	7				00262	0.0262	
	3				0.0355	0.0355	
	9				0.0298	0.0298	
	7				0,0111	0.0111	
	S		•		0,0148	0.0148	
	9				0.0136	0.0136	
	10		···, ····		0.0115	0,0113	
	·						
			·····	{			
		·					
		·	<u></u>				
		······			_ 		

Note:

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CERTIFICATE OF ANALYSIS

Environmental Resources Management, Inc						FILE #: 3926.00				
75 Valley Stream Parkway, Suite 400					REPORTED: 03/25/14 10:53			53		
Malvern, PA 1935	55						SUBMITT	ED:	03/21/14 t	o 03/22/14
ATTN: Mr. Jeff E PHONE: (443) 8	00	AX: (4	10) 266-8912				AQS SITE	-	ł	Honeywell Hex Chrome Study
Description:	OAM 1			Lab ID:	4032112	-01				Sampled: 03/20/14 10:40
Matrix:	Air			Sample V	olume:	21,46	5 m³			Received: 03/21/14 11:34
Comments:										Analysis Date: 03/24/14 14:19
				F	lexavalent	t Chro	mium			
					<u>Results</u>				<u>MDL</u>	
<u>Analyte</u>			CAS Numbe	<u>er</u>	<u>nq/m³ Air</u>		<u>Flag</u>		<u>ng/m³ Air</u>	
Hexavalent Chromiun	n		1854-02-99		0.0124				0.0036	

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023/25/14

Environmental Resources Manage	ement, Inc	FILE #: 3926.00			
75 Valley Stream Parkway, Suite 4	100	REPORTED: 03/25/14 10:53			
Maivern, PA 19355		SUBMITTED:	03/21/14 to 03/22/14		
ATTN: Mr. Jeff Boggs PHONE: (443) 803-8495 FA	X: (410) 266-8912		AQS SITE CODE: SITE CODE:	Honeywell Hex Chrome Study	
Description: OAM 2	Lab ID:	4032112-02	- <u>17</u> <u>-</u> .	Sampled: 03/20/14 11:26	
Matrix: Air	Sample V	/olume: 21.74	4 m³	Received: 03/21/14 11:34	
Comments:				Analysis Date: 03/24/14 14:49	
	I	Hexavalent Chro	omium		
		<u>Results</u>		MDL	
Analyte	CAS Number	<u>ng/m³ Air</u>	<u>Flag</u>	<u>ng/m³ Air</u>	
Hexavalent Chromium	1854-02-99	0.0262		0.0036	

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Environmental Resources Management, Inc					FILE #: 3926.00			
75 Valley Stream Parkway, Suite 400					REPORTE	REPORTED: 03/25/14 10:53		
Malvern, PA 19355				SUBMITTE	SUBMITTED: 03/21/14 to 03/22/14			
ATTN: Mr. Jeff Bo PHONE: (443) 80		(410) 266-8912			AQS SITE CODE: SITE CODE	E: 1	Honeywell Hex Chrome Study	
Description:	PAM-1		Lab ID: 4032112	2-03			Sampled: 03/20/14 09:44	
Matrix:	Air		Sample Volume:	21.4	5 m³		Received: 03/21/14 11:34	
Comments:	Col 1						Analysis Date: 03/24/14 16:20	
			Hexavalen	t Chro	mium			
			<u>Results</u>			<u>MDL</u>		
<u>Analyte</u>		CAS Numbe	er <u>ng/m³ Air</u>	:	Flag	<u>ng/m³ Air</u>		
Hexavalent Chromium		1854-02-99	0.0355			0.0036		

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Environmental Re	sources Ma	nagemei	nt, Inc				FILE #: 392	8.00		
75 Valley Stream	Parkway, Si	uite 400					REPORTED:	03/25/14 10:	53	
Malvern, PA 1935	5						SUBMITTED:	03/21/14 1	o 03/22/14	
ATTN: Mr. Jeff B	Boggs						AQS SITE			
PHONE: (443) 8	303-8495	FAX:	(410) 266-8912				SITE CODE:		Honeywell Hex Chrome Study	
Description:	PAM-1D			Lab ID:	4032112	2-04			Sampled: 03/20/14 10:02	
Matrix:	Air			Sample V	olume:	21.51	. m³		Received: 03/21/14 11:34	
Comments:	Col 2								Analysis Date: 03/24/14 16:40	
				н	exavalen	t Chro	mium			
					<u>Results</u>			<u>MDL</u>		
<u>Analyte</u>			CAS Numbe	er	<u>ng/m³ Air</u>	:	<u>Flag</u>	<u>ng/m³ Air</u>		
Hexavalent Chromium	I		1854-02-99		0.0298			0.0036		

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Environmental Resources Mar	nagement, Inc		FILE #: 3920	6.00	
75 Valley Stream Parkway, Su	iite 400		REPORTED:	03/25/14 10:53	
Malvern, PA 19355			SUBMITTED:	03/21/14 to 03/22/14	
ATTN: Mr. Jeff Boggs PHONE: (443) 803-8495	FAX: (410) 266-8912		AQS SITE	Honeywell He	x Chrome Study
Description: PAM-21	Lab ID:	4032112-05		Sample	d: 03/20/14 10:40
Matrix: Air	Sample	Volume: 21.4	6 m³	Receive	d: 03/21/14 11:34
Comments:				Analysis Da	e: 03/24/14 14:59
		Hexavalent Chro	omium		
		<u>Results</u>		MDL	
<u>Analyte</u>	CAS Number	<u>ng/m³ Air</u>	Flag	<u>ng/m³ Air</u>	
Hexavalent Chromium	1854-02-99	ND	U	0.0036	

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Environmental Resources Managem	ent, Inc	FILE #:	FILE #: 3926.00				
75 Valley Stream Parkway, Suite 400	0	REPOR	REPORTED: 03/25/14 10:53				
Malvern, PA 19355			SUBMIT	TED: 0	3/21/14 to 03/22/14		
ATTN: Mr. Jeff Boggs PHONE: (443) 803-8495 FAX:	(410) 266-8912		AQS SI		Honeywell Hex Chrome Study		
Description: PAM-31	Lab ID:	4032112	2-06		Sampled: 03/20/14 10:39	—	
Matrix: Air	Sample	Volume:	21.46 m	3	Received: 03/21/14 11:34		
Comments:					Analysis Date: 03/24/14 15:09		
		Hexavalen	t Chromium				
		<u>Results</u>			MDL		
Analyte	CAS Number	<u>ng/m³ Air</u>	<u>Flag</u>	ng	<u>/m³ Air</u>		
Hexavalent Chromium	1854-02-99	ND	U		0.0036		

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Environmental Resources Managem	ent, Inc	FILE #: 3926.00			
75 Valley Stream Parkway, Suite 400	ס		REPORTED:	03/25/14 10:5	3
Malvern, PA 19355			SUBMITTED:	03/21/14 to	03/22/14
ATTN: Mr. Jeff Boggs PHONE: (443) 803-8495 FAX:	(410) 266-8912		AQS SITE CODE: SITE CODE:	н	oneywell Hex Chrome Study
Description: OAM 1	Lab ID:	4032411-01			Sampled: 03/21/14 10:27
Matrix: Air	Sample V	Volume: 21.14	4 m³		Received: 03/22/14 10:06
Comments:					Analysis Date: 03/24/14 15:19
	I	Hexavalent Chro	omium		
		<u>Results</u>		<u>MDL</u>	
Analyte	CAS Number	<u>ng/m³ Air</u>	<u>Flag</u>	<u>ng/m³ Air</u>	
Hexavalent Chromium	1854-02-99	0.0111		0.0036	

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Environmental Resources Mana	agement, Inc		FILE #: 392	26.00					
75 Valley Stream Parkway, Suit	e 400		REPORTED:	03/25/14 10:53					
Malvern, PA 19355			SUBMITTED:	03/21/14 to 03/22/14					
ATTN: Mr. Jeff Boggs PHONE: (443) 803-8495	FAX: (410) 266-8912		AQS SITE CODE: SITE CODE:	Honeywell Hex Chrome Study					
Description: OAM 2	Lab ID:	4032411-02	····	Sampled: 03/21/14 11:55					
Matrix: Air	Sample	Volume: 20.89) m³	Received: 03/22/14 10:06					
Comments:				Analysis Date: 03/24/14 15:29					
Hexavalent Chromium									
		Results		MDL					
<u>Analyte</u>	CAS Number	ng/m³ Air	<u>Flag</u>	<u>ng/m³ Air</u>					
Hexavalent Chromium	1854-02-99	0.0148		0.0036					

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Environmental Resources Management, Inc					FILE #: 3926.00			
75 Valley Stream	Parkway, Suite 400				REPORTE	D: 03/25/14 10:	53	
Malvern, PA 1935	5				SUBMITTE	ED: 03/21/14	to 03/22/14	
ATTN: Mr. Jeff B PHONE: (443) 8	oggs 803-8495 FAX:	(410) 266-8912			AQS SITE		Honeywell Hex Chrome Study	
Description:	PAM-1		Lab ID: 40	32411-03			Sampled: 03/21/14 09:45	
Matrix:	Air		Sample Volum	e: 21.4	5 m³		Received: 03/22/14 10:06	
Comments:	Col 1						Analysis Date: 03/24/14 13:39	
			Hexav	alent Chro	omium			
			Res	<u>ults</u>		MDL		
<u>Analyte</u>		CAS Numbe	er ng/n	<u>n³ Air</u>	<u>Flag</u>	<u>ng/m³ Air</u>		
Hexavalent Chromium		1854-02-99	0.0	136		0.0036		

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Environmental Resources Management, Inc						FILE #: 3926.00			
75 Valley Stream	Parkway, Suite 400					REPORT	ED:	03/25/14 10:5	3
Malvern, PA 1935	5					SUBMITT	ED:	03/21/14 to	03/22/14
ATTN: Mr. Jeff E	Boggs					AQS SITE			
PHONE: (443) 8	303-8495 FAX:	(410) 266-8912				SITECOL	DE:	Η	oneywell Hex Chrome Study
Description:	PAM-1D		Lab ID:	4032411-	-04				Sampled: 03/21/14 09:59
Matrix:	Air		Sample Vo	olume:	21.42	m³			Received: 03/22/14 10:06
Comments:	Col 2								Analysis Date: 03/24/14 13:59
			H	exavalent	: Chro	mium			
				<u>Results</u>				MDL	
<u>Analyte</u>		CAS Numbe	er i	<u>ng/m³ Air</u>		<u>Flag</u>		<u>ng/m³ Air</u>	
Hexavalent Chromium	1	1854-02-99		0.0113				0.0036	

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Environmental Resources Management, Inc					FILE #: 3926.00			
75 Valley Stream Parkway, Suite 400					REPORTED: 03/25/14 10:53			
Malvern, PA 1935	5			SUE	MITTED:	03/21/14	to 03/22/14	
ATTN: Mr. Jeff B PHONE: (443) 8		(410) 266-8912		•	SITE	l	Honeywell Hex Chrome Study	
Description:	PAM-21		Lab ID: 4032411	05		······	Sampled: 03/21/14 10:17	
Matrix:	Air		Sample Volume:	21.42	m³		Received: 03/22/14 10:06	
Comments:							Analysis Date: 03/24/14 15:38	
			Hexavalen	t Chromiu	m	MDI		
			<u>Results</u>			MDL		
<u>Analyte</u>		CAS Numbe	<u>er ng/m³ Air</u>	: <u>F</u>	lag	<u>ng/m³ Air</u>		
Hexavalent Chromium		1854-02-99	ND		U	0.0036		

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Environmental Resources Management, Inc					FILE #: 3926.00					
75 Valley Stream	i Parkway, Su	uite 400					REPORT	ED: 0	3/25/14 10	:53
Malvern, PA 193	55						SUBMITT	TED:	03/21/14	to 03/22/14
ATTN: Mr. Jeff B PHONE: (443)	Boggs 803-8495	FAX: ((410) 266-8912				AQS SITI			Honeywell Hex Chrome Study
Description:	PAM-31			Lab ID:	4032411	L-06				Sampled: 03/21/14 10:28
Matrix:	Air			Sample Vo	olume:	21.14	m³	L		Received: 03/22/14 10:06
Comments:										Analysis Date: 03/24/14 17:00
				н	exavalen <u>Results</u>	t Chro	mium		MDL	
Analyte			CAS Numbe	2 4	ng/m ³ Air		Flag		ng/m³ Air	
Hexavalent Chromium			1854-02-99	<u>21.</u>	ND	-	<u>ເພ</u>		0.0036	

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