

ANALYTICAL REPORT

Job Number: 240-97441-1

Job Description: Ravenna, OH

For:
Cardno GS, Inc
2496 Old Ivy Road
Suite 300
Charlottesville, VA 22903

Attention: Mr. Peter Chapman

Approved for release.
Patrick J McEntee
Manager of Project Management
6/25/2018 3:56 PM

Patrick J McEntee, Manager of Project Management 4955 Yarrow Street, Arvada, CO, 80002 (303)736-0107 patrick.mcentee@testamericainc.com 06/25/2018

Oatul J. M. Enter

The test results in this report relate only to the samples in this report and meet all requirements of NELAC, with any exceptions noted. Pursuant to NELAP, this report shall not be reproduced except in full, without the written approval of the laboratory. All questions regarding this report should be directed to the TestAmerica Denver Project Manager.

The Lab Certification ID# is 4025.

Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.

TestAmerica Laboratories, Inc.

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Definitions/Glossary

Client: Cardno GS, Inc TestAmerica Job ID: 240-97441-1

Project/Site: Ravenna, OH

Glossary

TEF

TEQ

Toxicity Equivalent Factor (Dioxin)

Toxicity Equivalent Quotient (Dioxin)

Abbreviation These commonly used abbreviations may or may not be present in this report. ¤ Listed under the "D" column to designate that the result is reported on a dry weight basis %R Percent Recovery CFL Contains Free Liquid **CNF** Contains No Free Liquid DER Duplicate Error Ratio (normalized absolute difference) Dil Fac Dilution Factor DL Detection Limit (DoD/DOE) DL, RA, RE, IN Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample DLC Decision Level Concentration (Radiochemistry) **EDL** Estimated Detection Limit (Dioxin) LOD Limit of Detection (DoD/DOE) LOQ Limit of Quantitation (DoD/DOE) Minimum Detectable Activity (Radiochemistry) MDA Minimum Detectable Concentration (Radiochemistry) MDC MDL Method Detection Limit MLMinimum Level (Dioxin) NC Not Calculated ND Not Detected at the reporting limit (or MDL or EDL if shown) PQL Practical Quantitation Limit QC **Quality Control** Relative Error Ratio (Radiochemistry) **RER** Reporting Limit or Requested Limit (Radiochemistry) RL Relative Percent Difference, a measure of the relative difference between two points **RPD**

CASE NARRATIVE

Client: Cardno GS, Inc

Project: Ravenna, OH

Report Number: 240-97441-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 6/21/2018 5:45 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.8° C.

Hexavalent chromium analysis was performed by TestAmerica Canton. TestAmerica Canton is not hold DoD accreditation; therefore, method EPA SW-846 Method 7196A is reported with standard data qualifiers applied.

HEXAVALENT CHROMIUM

Samples FWGmw-024-062118-GW (240-97441-1), FWGmw-017-062118-GW (240-97441-2), FWGmw-021-062118-GW (240-97441-3), FWGmw-020-062118-GW (240-97441-4), FWGmw-018-062118-GW (240-97441-5), CBLmw-003-062118-GW (240-97441-6) and CBLmw-004-062118-GW (240-97441-7) were analyzed for hexavalent chromium in accordance with EPA SW-846 Method 7196A. The samples were analyzed on 06/21/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Project/Site: Ravenna, OH Client Sample ID: FWGmw-024-062118-GW Lab Sample ID: 240-97441-1 No Detections. Client Sample ID: FWGmw-017-062118-GW Lab Sample ID: 240-97441-2 No Detections. Client Sample ID: FWGmw-021-062118-GW Lab Sample ID: 240-97441-3 No Detections. Client Sample ID: FWGmw-020-062118-GW Lab Sample ID: 240-97441-4 No Detections. Client Sample ID: FWGmw-018-062118-GW Lab Sample ID: 240-97441-5 No Detections. Client Sample ID: CBLmw-003-062118-GW Lab Sample ID: 240-97441-6 No Detections. Client Sample ID: CBLmw-004-062118-GW Lab Sample ID: 240-97441-7

Client: Cardno GS, Inc

No Detections.

TestAmerica Job ID: 240-97441-1

Client Sample Results

Client: Cardno GS, Inc

Project/Site: Ravenna, OH

Client Sample ID: FWGmw-024-062118-GW Lab Sample ID: 240-97441-1 Date Collected: 06/21/18 09:55 **Matrix: Water** Date Received: 06/21/18 17:45 **General Chemistry** RL Analyte **MDL** Unit Dil Fac Result Qualifier D **Prepared** Analyzed Hexavalent chromium 20 ND 3.0 ug/L 06/21/18 19:11 Client Sample ID: FWGmw-017-062118-GW Lab Sample ID: 240-97441-2 Date Collected: 06/21/18 10:00 **Matrix: Water** Date Received: 06/21/18 17:45 **General Chemistry** Analyte Result Qualifier RL **MDL** Unit D **Prepared** Analyzed Dil Fac 20 06/21/18 19:04 Hexavalent chromium ND 3.0 ug/L Client Sample ID: FWGmw-021-062118-GW Lab Sample ID: 240-97441-3 Date Collected: 06/21/18 11:55 **Matrix: Water** Date Received: 06/21/18 17:45 **General Chemistry** Analyte Result Qualifier RL **MDL** Unit D **Prepared** Analyzed Dil Fac ND 20 3.0 ug/L 06/21/18 19:08 Hexavalent chromium Client Sample ID: FWGmw-020-062118-GW Lab Sample ID: 240-97441-4 Date Collected: 06/21/18 14:15 **Matrix: Water** Date Received: 06/21/18 17:45 **General Chemistry** Analyte Result Qualifier RL **MDL** Unit ח Analyzed Dil Fac Prepared 20 Hexavalent chromium $\overline{\mathsf{ND}}$ 3.0 ug/L 06/21/18 19:06 Client Sample ID: FWGmw-018-062118-GW Lab Sample ID: 240-97441-5 Date Collected: 06/21/18 14:20 **Matrix: Water** Date Received: 06/21/18 17:45 **General Chemistry** Analyte Result Qualifier RL **MDL** Unit D **Prepared** Analyzed Dil Fac Hexavalent chromium 20 06/21/18 19:00 $\overline{\mathsf{ND}}$ 3.0 ug/L Client Sample ID: CBLmw-003-062118-GW Lab Sample ID: 240-97441-6 Date Collected: 06/21/18 16:30 **Matrix: Water** Date Received: 06/21/18 17:45 **General Chemistry** Result Qualifier Analyte RL MDL Unit **Prepared** Analyzed Dil Fac 20 Hexavalent chromium ND 3.0 ug/L 06/21/18 19:10 Client Sample ID: CBLmw-004-062118-GW Lab Sample ID: 240-97441-7 Date Collected: 06/21/18 16:40 **Matrix: Water** Date Received: 06/21/18 17:45 **General Chemistry** Analyte Result Qualifier RL **MDL** Unit D Prepared Analyzed Dil Fac 20 06/21/18 19:02 ND Hexavalent chromium 3.0 ug/L

TestAmerica Canton 06/25/2018

TestAmerica Job ID: 240-97441-1

Default Detection Limits

Client: Cardno GS, Inc Project/Site: Ravenna, OH TestAmerica Job ID: 240-97441-1

General Chemistry

Analyte	RL	MDL	Units	Method
Hexavalent chromium	20	3.0	ug/L	7196A

QC Sample Results

Client: Cardno GS, Inc TestAmerica Job ID: 240-97441-1

Project/Site: Ravenna, OH

Method: 7196A - Chromium, Hexavalent

Lab Sample ID: MB 240-332680/3

Matrix: Water

Client Sample ID: Method Blank

Prep Type: Total/NA

Analysis Batch: 332680

MB MB

AnalyteResultQualifierRLMDLUnitDPreparedAnalyzedDil FacHexavalent chromiumND203.0ug/L06/21/18 08:011

Lab Sample ID: LCS 240-332680/4 Client Sample ID: Lab Control Sample

Matrix: Water Prep Type: Total/NA

Analysis Batch: 332680

 Analyte
 Added Hexavalent chromium
 Agded Person
 Result Qualifier Unit ug/L
 Unit Ug/L
 D %Rec Limits WRec.

QC Association Summary

Client: Cardno GS, Inc
Project/Site: Ravenna, OH

TestAmerica Job ID: 240-97441-1

General Chemistry

Analysis Batch: 332680

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-97441-1	FWGmw-024-062118-GW	Total/NA	Water	7196A	
240-97441-2	FWGmw-017-062118-GW	Total/NA	Water	7196A	
240-97441-3	FWGmw-021-062118-GW	Total/NA	Water	7196A	
240-97441-4	FWGmw-020-062118-GW	Total/NA	Water	7196A	
240-97441-5	FWGmw-018-062118-GW	Total/NA	Water	7196A	
240-97441-6	CBLmw-003-062118-GW	Total/NA	Water	7196A	
240-97441-7	CBLmw-004-062118-GW	Total/NA	Water	7196A	
MB 240-332680/3	Method Blank	Total/NA	Water	7196A	
LCS 240-332680/4	Lab Control Sample	Total/NA	Water	7196A	

Lab Chronicle

Client: Cardno GS, Inc Project/Site: Ravenna, OH TestAmerica Job ID: 240-97441-1

Client Sample ID: FWGmw-024-062118-GW

Lab Sample ID: 240-97441-1 Date Collected: 06/21/18 09:55 **Matrix: Water**

Date Received: 06/21/18 17:45

Batch Batch Dilution Batch **Prepared** Method **Factor** Number or Analyzed **Prep Type** Type Run Analyst Lab

Total/NA Analysis 7196A 332680 06/21/18 19:11 LKG TAL CAN

Client Sample ID: FWGmw-017-062118-GW

Lab Sample ID: 240-97441-2 Date Collected: 06/21/18 10:00 **Matrix: Water**

Date Received: 06/21/18 17:45

Batch Batch Dilution Batch **Prepared Prep Type** Type Method Run **Factor** Number or Analyzed Analyst Lab Total/NA 7196A 332680 06/21/18 19:04 LKG TAL CAN Analysis

Client Sample ID: FWGmw-021-062118-GW Lab Sample ID: 240-97441-3

Date Collected: 06/21/18 11:55 **Matrix: Water**

Date Received: 06/21/18 17:45

Dilution Batch Batch Batch **Prepared** Method **Prep Type** Type Run Factor Number or Analyzed Analyst Lab 7196A 332680 TAL CAN Total/NA Analysis 06/21/18 19:08 LKG

Client Sample ID: FWGmw-020-062118-GW Lab Sample ID: 240-97441-4

Date Collected: 06/21/18 14:15 **Matrix: Water**

Date Received: 06/21/18 17:45

Batch Batch Dilution Batch **Prepared** Type Method **Factor** Number or Analyzed **Prep Type** Run Analyst Lab Total/NA 7196A 06/21/18 19:06 LKG TAL CAN Analysis

Client Sample ID: FWGmw-018-062118-GW Lab Sample ID: 240-97441-5

Date Collected: 06/21/18 14:20 **Matrix: Water**

Date Received: 06/21/18 17:45

Batch Ratch Dilution Batch **Prepared Prep Type** Type Method Run Factor Number or Analyzed Analyst Lab Total/NA Analysis 7196A 332680 06/21/18 19:00 LKG TAL CAN

Client Sample ID: CBLmw-003-062118-GW Lab Sample ID: 240-97441-6

Date Collected: 06/21/18 16:30 **Matrix: Water**

Date Received: 06/21/18 17:45

Batch Batch Dilution **Batch Prepared** Method Run Number **Prep Type** Type **Factor** or Analyzed Analyst Lab 7196A TAL CAN Total/NA Analysis 332680 06/21/18 19:10 LKG

Lab Chronicle

Client: Cardno GS, Inc TestAmerica Job ID: 240-97441-1 Project/Site: Ravenna, OH

Client Sample ID: CBLmw-004-062118-GW

Lab Sample ID: 240-97441-7 Date Collected: 06/21/18 16:40

Matrix: Water

Date Received: 06/21/18 17:45

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	7196A		1	332680	06/21/18 19:02	LKG	TAL CAN

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: Cardno GS, Inc TestAmerica Job ID: 240-97441-1 Project/Site: Ravenna, OH

Laboratory: TestAmerica Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-19
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-18 *
Kansas	NELAP	7	E-10336	01-31-19
Kentucky (UST)	State Program	4	58	02-23-19
Kentucky (WW)	State Program	4	98016	12-31-18
Minnesota	NELAP	5	039-999-348	12-31-18
Minnesota (Petrofund)	State Program	1	3506	07-31-18 *
Nevada	State Program	9	OH-000482008A	07-31-18 *
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-19
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-19
Pennsylvania	NELAP	3	68-00340	08-31-18 *
Texas	NELAP	6	T104704517-17-9	08-31-18 *
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-18 *
Washington	State Program	10	C971	01-12-19
West Virginia DEP	State Program	3	210	12-31-18

Laboratory: TestAmerica Denver

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-19
A2LA	ISO/IEC 17025		2907.01	10-31-19
Alabama	State Program	4	40730	09-30-12 *
Alaska (UST)	State Program	10	UST-30	01-08-19
Arizona	State Program	9	AZ0713	12-20-18
California	State Program	9	2513	01-18-19
Connecticut	State Program	1	PH-0686	09-30-18
Georgia	State Program	4	N/A	01-08-19 *
Illinois	NELAP	5	200017	04-30-18 *
Iowa	State Program	7	370	12-01-18
Kansas	NELAP	7	E-10166	05-31-18 *
Louisiana	NELAP	6	30785	06-30-14 *
Maine	State Program	1	CO0002	03-03-19
Minnesota	NELAP	5	8-999-405	12-31-18
Nevada	State Program	9	CO0026	07-31-18
New Hampshire	NELAP	1	205310	04-28-19
New York	NELAP	2	11964	04-01-19
North Carolina (WW/SW)	State Program	4	358	12-31-18
North Dakota	State Program	8	R-034	01-08-19
Oklahoma	State Program	6	8614	08-31-18
Oregon	NELAP	10	4025	01-08-19
Pennsylvania	NELAP	3	68-00664	07-31-18
South Carolina	State Program	4	72002001	01-08-19
Texas	NELAP	6	T104704183-17-14	09-30-18
USDA	Federal			03-26-21

^{*} Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: Cardno GS, Inc TestAmerica Job ID: 240-97441-1 Project/Site: Ravenna, OH

Laboratory: TestAmerica Denver (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date	
Utah	NELAP	8	CO00026	07-31-18	
Virginia	NELAP	3	460232	06-14-19	
Washington	State Program	10	C583	08-03-18	
West Virginia DEP	State Program	3	354	12-31-18	
Wisconsin	State Program	5	999615430	08-31-18	
Wyoming (UST)	A2LA	8	2907.01	10-31-19	

Method Summary

Client: Cardno GS, Inc Project/Site: Ravenna, OH TestAmerica Job ID: 240-97441-1

Method	Method Description	Protocol	Laboratory
7196A	Chromium, Hexavalent	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Sample Summary

Client: Cardno GS, Inc Project/Site: Ravenna, OH TestAmerica Job ID: 240-97441-1

Lab Sample ID	Client Sample ID	Matrix	Collected Receiv	⁄ed
240-97441-1	FWGmw-024-062118-GW	Water	06/21/18 09:55 06/21/18	17:45
240-97441-2	FWGmw-017-062118-GW	Water	06/21/18 10:00 06/21/18	17:45
240-97441-3	FWGmw-021-062118-GW	Water	06/21/18 11:55 06/21/18	17:45
240-97441-4	FWGmw-020-062118-GW	Water	06/21/18 14:15 06/21/18	17:45
240-97441-5	FWGmw-018-062118-GW	Water	06/21/18 14:20 06/21/18	17:45
240-97441-6	CBLmw-003-062118-GW	Water	06/21/18 16:30 06/21/18	17:45
240-97441-7	CBLmw-004-062118-GW	Water	06/21/18 16:40 06/21/18	17:45

REAGENT TRACEABILITY SUMMARY

Lab	Name:	TestAmerica	Canton	Job No.:	240-97441-1
SDG	No.:				

				Reagent	Parent Reagent			
Reagent ID	Exp Date	Prep Date	Dilutant Used	Final Volume	Reagent ID	Volume Added	Analyte	Concentration
WCCHROME50PM2 00022	09/09/18	03/09/18	DIWATER, Lot 052014	1000 mL	WCKDICHROME62 00003	0.1414 g	Hexavalent chromium	49.9764 mg/L
.WCKDICHROME62_00003	06/06/19		Fisher, Lot 140919		(Purchased Reage	ent)	Hexavalent chromium	0.35344 g/g
WCCHROME50PPM_00024	09/09/18	03/09/18	DIWATER, Lot 052014	1000 mL	WCKDICHROME62_00004	0.1414 g	Hexavalent chromium	49.9764 mg/L
.WCKDICHROME62 00004	09/07/21		Fisher, Lot 126893	•	(Purchased Reage	ent)	Hexavalent chromium	0.35344 g/g

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Reagent

WCKDICHROME62_00003



1 Reagent Lane Fair Lawn, NJ 07410 201.796.7100 tel 201.796.1329 fax

Certificate of Analysis

Fisher Scientific's Quality System has been found to conform to Quality Management System Standard ISO9001:2008 standard by SAI Global Certificate Number CERT - 0064970

This is to certify that units of the above mentioned lot number were tested and found to comply with the specifications of the grade listed. Certain data have been supplied by third parties. Fisher Scientific expressly disclaims all warranties, expressed or implied, including the implied warranties of merchantability and fitness for a particular purpose. Certain products (USP/FCC/NF/EP/BP/JP grades) are sold for use in food, drug, or medical device manufacturing. Fisher does not claim regulatory coverage under 21 CFR nor maintain DMF's with the FDA. The following are the actual analytical results obtained:

Catalog Numbe	r P188	8		Quality Test / Release Date 2/25/2014							
Lot Number	1409	919									
Description I	POTAS	SSIUM DICH	ROMATE, A.C.S.	OMATE, A.C.S.							
Country of Orig	in	United Sta	tes	* Suggested Retest Date Feb-2019							
Chemical Origin	1	Inorganic-	non animal								
BSE/TSE Comm	nent		No animal products are us processing, including lubri migrate to the finished pro	sed as starting raw material ingredie icants, processing aids, or any other oduct.	nts, or used in material that might						

Result name	Units	Specifications	Test Value
APPEARANCE		REPORT	FINE ORANGE-RED CRYSTALS
ASSAY	%	>= 99	99.9
CALCIUM	%	<= 0.003	0.0010
CHLORIDE	%	<= 0.001	<0.0010
IDENTIFICATION	PASS/FAIL	= PASS TEST	PASS TEST
INSOLUBLE MATTER	%	<= 0.005	0.002
IRON (Fe)	%	<= 0.001	0.0010
LOSS ON DRYING @ 105 C	%	<= 0.05	0.02
SODIUM (Na)	%	<= 0.02	0.001
SULFATE (SO4)	%	<= 0.005	0.002



Edgan E. Hara

Lab Manager Fair Lawn

Note: The data listed is valid for all package sizes of this lot of this product, expressed as a extension of this catalog number listed above. If there are any questions with this certificate, please call Chemical Services at (800) 227-6701. *Based on suggested storage condition.

Reagent

WCKDICHROME 62_00004



1 Reagent Lane Fair Lawn, NJ 07410 201.796.7100 tel 201.796.1329 fax

Certificate of Analysis

Fisher Scientific's Quality System has been found to conform to Quality Management System Standard ISO9001:2008 standard by DNV Certificate number CERT-08052-2006-AQ-HOU-ANAB

This is to certify that units of the above mentioned lot number were tested and found to comply with the specifications of the grade listed. Certain data have been supplied by third parties. Fisher Scientific expressly disclaims all warranties, expressed or implied, including the implied warranties of merchantability and fitness for a particular purpose. Certain products (USP/FCC/NF/EP/BP/JP grades) are sold for use in food, drug, or medical device manufacturing. Fisher does not claim regulatory coverage under 21 CFR nor maintain DMF's with the FDA. The following are the actual analytical results obtained:

Catalog Numbe	r P188	8		Mfg. Date	11/16/2012				
Lot Number	1268	393							
Description POTASSIUM DICHROMATE, A.C.S.									
Country of Orig	in	United Sta	ates Recommended Retest Date Nov-2017						
Chemical Origin	1	Inorganic-	non animal						
BSE/TSE Comm	nent		No animal products are us processing, including lubri migrate to the finished pro	icants, processi	aw material ingredie ng aids, or any other	nts, or used in material that might			

Result name	Units	Specifications	Test Value
APPEARANCE	ı	REPORT	Fine, orange-red powder
ASSAY	%	>= 99	99.8
CALCIUM	%	<= 0.003	<0.0010
CHLORIDE	%	<= 0.001	<0.0010
IDENTIFICATION	PASS/FAIL	= PASS TEST	PASS TEST
INSOLUBLE MATTER	%	<= 0.005	0.004
IRON (Fe)	%	<= 0.001	0.0010
LOSS ON DRYING @ 105 C	%	<= 0.05	0.03
SODIUM (Na)	%	<= 0.02	0.005
SULFATE (SO4)	%	<= 0.005	0.003



Lab Manager Fair Lawn

Edgan E. Have

Note: The data listed is valid for all package sizes of this lot of this product, expressed as a extension of this catalog number listed above. If there are any questions with this certificate, please call Chemical Services at (800) 227-6701.

GENERAL CHEMISTRY

COVER PAGE GENERAL CHEMISTRY

Lab Name	e: TestAmerica Canton	Job Number: 240-97441-1	
SDG No.:			
Project:	Ravenna, OH		
	Client Sample ID	Lab Sample ID	
	FWGmw-024-062118-GW	240-97441-1	
	FWGmw-017-062118-GW	240-97441-2	
SDG No.: Project: Rav Cli FWG FWG FWG CBI	FWGmw-021-062118-GW	240-97441-3	
	FWGmw-020-062118-GW	240-97441-4	
	FWGmw-018-062118-GW	240-97441-5	
	CBLmw-003-062118-GW	240-97441-6	
	CBLmw-004-062118-GW	240-97441-7	

Comments:

Client Sample	ID: FWGmw-024-062118-0		Lab Sample ID: 240-97441-1								
Lab Name: Te	Lab Name: TestAmerica Canton				Job No.: 240-97441-1						
SDG ID.:											
Matrix: Water	r		Date Sampled: 06/21/2018 09:55								
Reporting Bas	is: WET			Date Recei	ved: 06/2	21/2018	17:45				
CAS No.	Analyte	Result	RL	MDL	Units	С	Q	DIL	Method		
18540-29-9	Hexavalent chromium	ND	20	3.0	ug/L			1	7196A		

Client Sample	ID: FWGmw-017-062118-0		Lab Sample ID: 240-97441-2							
Lab Name: Te	stAmerica Canton		Job No.: 240-97441-1							
SDG ID.:										
Matrix: Water	r		Date Sampl	ed: 06/21	./2018	10:00				
Reporting Bas	is: WET			Date Recei	ved: 06/2	21/2018	17:45			
							_			
CAS No.	Analyte	Result	RL	MDL	Units	С	Q	DIL	Method	
18540-29-9	Hexavalent chromium	ND	20	3.0	11a/T			1	7196A	

Client Sample	ID: FWGmw-021-062118-0	GW		Lab Sample ID: 240-97441-3					
Lab Name: Te	stAmerica Canton		Job No.: 240-97441-1						
SDG ID.:									
Matrix: Water				Date Sampl	ed: 06/21	/2018	11:55		
Reporting Bas:	is: WET			Date Recei	ved: 06/2	21/2018	17:45		
CAS No.	Analyte	Result	RL	MDL	Units	С	Q	DIL	Method

20

3.0 ug/L

ND

18540-29-9

Hexavalent chromium

7196A

Client Sample	ID: FWGmw-020-062118-0		Lab Sample	ID: 240-	-97441-4					
Lab Name: Te	estAmerica Canton		Job No.: 240-97441-1							
SDG ID.:										
Matrix: Wate	r		Date Sampled: 06/21/2018 14:15							
Reporting Bas	is: WET			Date Recei	ved: 06/2	21/2018	17:45			
CAS No.	Analyte	Result	RL	MDL	Units	С	Q	DIL	Method	
	-									
18540-29-9	Hexavalent chromium	ND	2.0	3.0	lua/T		1	1 1	7196A	

Client Sample	ID: FWGmw-018-062118-0		Lab Sample ID: 240-97441-5								
Lab Name: Te	Lab Name: TestAmerica Canton				Job No.: 240-97441-1						
SDG ID.:											
Matrix: Water			Date Sampled: 06/21/2018 14:20								
Reporting Basi	is: WET			Date Recei	ved: 06/2	21/2018	17:45				
CAS No.	Analyte	RL	MDL	Units	С	Q	DIL	Method			
18540-29-9	Hexavalent chromium	ND	20	3.0	ug/L			1	7196A		

Client Sample	ID: CBLmw-003-062118-0		Lab Sample	ID: 240-	-97441-6						
Lab Name: Te	Lab Name: TestAmerica Canton				Job No.: 240-97441-1						
SDG ID.:											
Matrix: Wate	r			Date Sampl	ed: 06/21	/2018	16:30				
Reporting Bas	is: WET			Date Recei	ved: 06/2	21/2018	17:45				
CAS No.	Analyte	Result	RL	MDL	Units	С	Q	DIL	Method		
18540-29-9	Hexavalent chromium	ND	20	3.0	ug/L			1	7196A		

Client Sample	ID: CBLmw-004-062118-0		Lab Sample	ID: 240-	240-97441-7						
Lab Name: Te	Lab Name: TestAmerica Canton				Job No.: 240-97441-1						
SDG ID.:											
Matrix: Water	•		Date Sampled: 06/21/2018 16:40								
Reporting Bas	is: WET			Date Recei	ved: 06/2	21/2018	17:45				
CAS No.	Analyte	Result	RL	MDL	Units	С	Q	DIL	Method		
18540-29-9	Hexavalent chromium	ND	20	3 0	110 / T.			1	71964		

2-IN CALIBRATION QUALITY CONTROL GENERAL CHEMISTRY

Lab Name: TestAmerica Canton Job No.: 240-97441-1

SDG No.:

Analyst: JWW Batch Start Date: 06/12/2018

Reporting Units: mg/L Analytical Batch No.: 331317

Sample QC Number Type	Time	Analyte	Result	Spike Amount	(%) Recovery	Limits	Qual	Reagent
7 ICV	16:38	Hexavalent chromium	0.266	0.250	106	90-110		WCCHROME50PM2_0002 2
8 ICB	16:39	Hexavalent chromium	ND					

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.

2-IN CALIBRATION QUALITY CONTROL GENERAL CHEMISTRY

Lab Name: TestAmerica Canton Job No.: 240-97441-1

SDG No.:

Analyst: LKG Batch Start Date: 06/21/2018

Reporting Units: mg/L Analytical Batch No.: 332680

Sample Number		Time	Analyte	Result	Spike Amount	(%) Recovery	Limits	Qual	Reagent
1	CCV	08:01	Hexavalent chromium	0.270	0.250	108	90-110		WCCHROME50PPM_0002
2	CCB	08:01	Hexavalent chromium	ND					
10	CCV	08:06	Hexavalent chromium	0.270	0.250	108	90-110		WCCHROME50PPM_0002 4
11	CCB	08:06	Hexavalent chromium	ND					
22	CCV	11:35	Hexavalent chromium	0.251	0.250	100	90-110		WCCHROME50PPM_0002 4
23	CCB	11:37	Hexavalent chromium	ND					
31	CCV	19:12	Hexavalent chromium	0.263	0.250	105	90-110		WCCHROME50PPM_0002 4
32	CCB	19:13	Hexavalent chromium	ND					

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.

3-IN METHOD BLANK GENERAL CHEMISTRY

Lab Name: TestAmerica Canton Job No.: 240-97441-1

SDG No.:

Method	Lab Sample ID	Analyte	Result Qual	Units	RL	Dil
Batch ID:	332680 Date:	06/21/2018 08:01				
7196A	MB 240-332680/3	Hexavalent chromium	ND	ug/L	20	1

7A-IN LAB CONTROL SAMPLE GENERAL CHEMISTRY

Lab Name: TestAmerica Canton Job No.: 240-97441-1 SDG No.:

Matrix: Water

Result C Unit Spike Pct. Amount Rec. Limits RPD Limit Method Lab Sample ID Analyte Q Batch ID: 332680 Date: 06/21/2018 08:01

LCS Source: WCCHROME50PM2 00022 LCS Hexavalent chromium 263 ug/L 250 105 80-123 240-332680/4 7196A LCS

Calculations are performed before rounding to avoid round-off errors in calculated results.

9-IN DETECTION LIMITS GENERAL CHEMISTRY

Lab Name: TestAmerica Canton

SDG Number: 240-97441-1

Matrix: Water

Method: 7196A

MDL Date: 04/25/2017 11:21

Analyte	Wavelength/	RL	MDL
	Mass	(mg/L)	(mg/L)
Hexavalent chromium		0.02	0.003

9-IN CALIBRATION BLANK DETECTION LIMITS GENERAL CHEMISTRY

Lab Name: TestAmerica Canton	Job Number: 240-97441-1
SDG Number:	
Matrix: Water	Instrument ID: OSCAR
Method: 7196A	XMDL Date: 04/25/2017 11:21

Analyte	Wavelength/	XRL	XMDL
	Mass	(mg/L)	(mg/L)
Hexavalent chromium		0.02	0.003

13-IN ANALYSIS RUN LOG GENERAL CHEMISTRY

Lab Name: TestAmerica Canton	Job No.:	240-97441-1
------------------------------	----------	-------------

SDG No.:

Instrument ID: OSCAR Analysis Method: 7196A

Start Date: 06/12/2018 16:33 End Date: 06/12/2018 16:45

		Т		Analytes
Lab Sample Id	D/F	У р е	Time	C r 6
IC 240-331317/1	1		16:33	X X
IC 240-331317/2	1		16:33	X
IC 240-331317/3	1		16:34	X
IC 240-331317/4	1		16:35	X
IC 240-331317/5	1		16:36	X
IC 240-331317/6	1		16:37	X
ICV 240-331317/7	1		16:38	X
ICB 240-331317/8	1		16:39	X
ZZZZZZ			16:39	
ZZZZZZ			16:40	
ZZZZZZ			16:41	
ZZZZZZ			16:42	
ZZZZZZ			16:43	
CCV 240-331317/14			16:44	
CCB 240-331317/15			16:45	

Prep Types:

=

13-IN ANALYSIS RUN LOG GENERAL CHEMISTRY

Lab	Name:	TestAmerica	Canton	Job No.:	240-97441-1

SDG No.:

Instrument ID: OSCAR Analysis Method: 7196A

Start Date: 06/21/2018 08:01 End Date: 06/21/2018 19:13

		Т								Aı	na.	lyt	ces	3					
Lab Sample Id	D/F	У р е	Time	C r 6															
CCV 240-332680/1	1		08:01	Х															Ī
CCB 240-332680/2	1		08:01	Х															
MB 240-332680/3	1	Т	08:01	Х															
LCS 240-332680/4	1	Т	08:01	Х															
ZZZZZZ			08:03																
ZZZZZZ			08:03																
ZZZZZZ			08:04																
ZZZZZZ			08:04																
ZZZZZZ			08:06																
CCV 240-332680/10	1		08:06	Х															
CCB 240-332680/11	1		08:06	Х															
ZZZZZZ			08:08																
ZZZZZZ			08:08																
ZZZZZZ			08:10																
ZZZZZZ			08:10																
CCV 240-332680/16			08:11																
CCB 240-332680/17			08:13																
ZZZZZZ			09:17																
CCV 240-332680/19			09:17																
CCB 240-332680/20			09:17																
ZZZZZZ			11:35																
CCV 240-332680/22	1		11:35	Х															
CCB 240-332680/23	1		11:37	Х															
240-97441-5	1	Т	19:00	Х															
240-97441-7	1	Т	19:02	Х															
240-97441-2	1	Т	19:04	Х			1												
240-97441-4	1	Т	19:06	Х			1												
240-97441-3	1	Т	19:08	Х			1												
240-97441-6	1	Т	19:10	Х				\top											
240-97441-1	1	Т	19:11	Х				\top											
CCV 240-332680/31	1		19:12	Х				\top											
CCB 240-332680/32	1		19:13	Х															

Prep Types:

T = Total/NA

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Canton Job No.: 240-97441-1

SDG No.:

Batch Number: 331317 Batch Start Date: 06/12/18 16:33 Batch Analyst: Weimer, Joshua W

Batch Method: 7196A Batch End Date: 06/12/18 16:46

						-			
Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	UnCorResp	WCCHROME50PM2	WCCHROME50PPM	
							00022	00024	
IC 240-331317/1		7196A		50.0 mL	50.0 mL	0 Absorbance			
IC 240-331317/2		7196A		50.0 mL	50.0 mL	0.004		0.005 mL	
						Absorbance			
IC 240-331317/3		7196A		50.0 mL	50.0 mL	0.008		0.01 mL	
						Absorbance			
IC 240-331317/4		7196A		50.0 mL	50.0 mL	0.074		0.1 mL	
						Absorbance			
IC 240-331317/5		7196A		50.0 mL	50.0 mL	0.190		0.25 mL	
						Absorbance			
IC 240-331317/6		7196A		50.0 mL	50.0 mL	0.362		0.5 mL	
						Absorbance			
ICV		7196A		50.0 mL	50.0 mL	0.195	0.25 mL		
240-331317/7						Absorbance			
ICB		7196A		50.0 mL	50.0 mL	0 Absorbance			
240-331317/8									

Batch Notes							
Acid Used for pH Adjustment ID	3294428						
Spectrophotometer Cell Path Length	1 cm						
Color Reagent ID	3628696						

Basis	Basis Description

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

7196A Page 1 of 1

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Canton Job No.: 240-97441-1

SDG No.:

Batch Number: 332680 Batch Start Date: 06/21/18 08:01 Batch Analyst: Grossman, Lucas

Batch Method: 7196A Batch End Date: 06/21/18 19:06

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	ColorBlk	UnCorResp	WCCHROME50PM2 00022	WCCHROME50PPM 00024
CCV 240-332680/1		7196A		50 mL	50 mL		.198 Absorbance		0.25 mL
CCB 240-332680/2		7196A		50 mL	50 mL		0 Absorbance		
MB 240-332680/3		7196A		50 mL	50 mL		0 Absorbance		
LCS 240-332680/4		7196A		50 mL	50 mL		.193 Absorbance	0.25 mL	
CCV 240-332680/10		7196A		50 mL	50 mL		.198 Absorbance		0.25 mL
CCB 240-332680/11		7196A		50 mL	50 mL		0 Absorbance		
CCV 240-332680/22		7196A		50 mL	50 mL		.184 Absorbance		0.25 mL
CCB 240-332680/23		7196A		50 mL	50 mL		0 Absorbance		
240-97441-A-5	FWGmw-018-062118 -GW	7196A	Т	50 mL	50 mL	0 Absorbance	0 Absorbance		
240-97441-A-7	CBLmw-004-062118 -GW	7196A	Т	50 mL	50 mL	0.001 Absorbance	0.001 Absorbance		
240-97441-A-2	FWGmw-017-062118 -GW	7196A	Т	50 mL	50 mL	0.001 Absorbance	0.001 Absorbance		
240-97441-A-4	FWGmw-020-062118 -GW	7196A	Т	50 mL	50 mL	0.004 Absorbance	0.004 Absorbance		
240-97441-A-3	FWGmw-021-062118 -GW	7196A	Т	50 mL	50 mL	0.002 Absorbance	0.002 Absorbance		
240-97441-A-6	CBLmw-003-062118 -GW	7196A	Т	50 mL	50 mL	0.008 Absorbance	0.008 Absorbance		
240-97441-A-1	FWGmw-024-062118 -GW	7196A	Т	50 mL	50 mL	0.002 Absorbance	0.002 Absorbance		
CCV 240-332680/31		7196A		50 mL	50 mL		0.193 Absorbance		0.25 mL
CCB 240-332680/32		7196A		50 mL	50 mL		0 Absorbance		

Batch Notes				
Acid Used for pH Adjustment ID	3294428			
Spectrophotometer Cell Path Length	1 cm			
Color Reagent ID	3641717			
Phosphoric Acid ID	2449071			

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

7196A Page 1 of 2

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Canton Job No.: 240-97441-1 SDG No.:

Batch Start Date: 06/21/18 08:01 Batch Analyst: Grossman, Lucas Batch Number: 332680

Batch Method: 7196A Batch End Date: 06/21/18 19:06

Basis	Basis Description
Т	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

7196A Page 2 of 2 Page 41 of 46

Calibration

Curve Type: Weighting:

Linear

None None

Dependency:

Concentration

Calib Mode:

Origin:

ESTD AREA

Response Base: RF Rounding:

Curve Coefficients

Intercept: Slope:

-0.001879

1.373

Error Coefficients

Standard Error:

0.00526

Relative Standard Error:

16.9

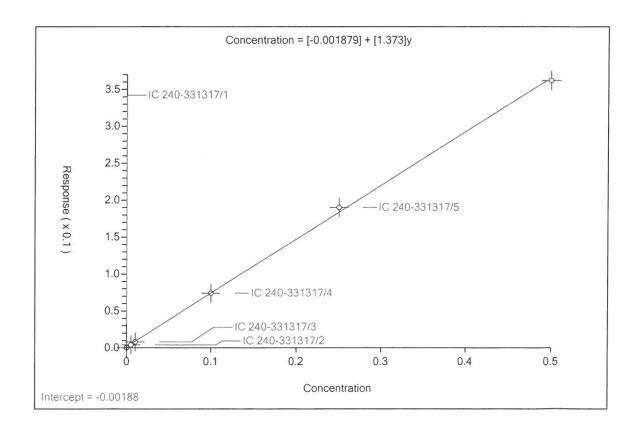
Correlation Coefficient:

1.000

Coefficient of Determination (Adjusted):

0.999 (0.999)

ID	Level	Concentration	Response	IS Amount	IS Response	RF	Used
1	IC 240-331317/1	0.0	0.0			NaN	Υ
2	IC 240-331317/2	0.004998	0.004			0.800378	Υ
3	IC 240-331317/3	0.009995	0.008			0.800378	Υ
4	IC 240-331317/4	0.099953	0.074			0.74035	Υ
5	IC 240-331317/5	0.249882	0.19			0.760359	Υ
6	IC 240-331317/6	0.499764	0.362			0.724342	Υ



Shipping and Receiving Documents

TestAmerica Canton

LESTHMETICA LANTON 4101 Shuffel Street, N. H.	ט	Chain of Custody Record		TestAmerica
North Canton, UN 44720 Phone: 330.497.9396 Fax: 330.497.0772	Regulatory Program:	NDDE	SCOTOT	THE LEADER IN ENVIRONMENTAL TESTING TestAmerica Laboratories, Inc.
Client Contact		Site Contact:	Date:	COC No:
Company Name:	Tel/Fax:	Lab Contact:	Carrier:	of COCs
Address:	Analysis Turnaround Time	\u		1
City/State/Zip:	CALENDAR DAYS WORKING DAYS			For Lab Use Only:
Phone:	TAT if different from Below	(N		Walk-in Client:
Fax:	2 weeks	11		Lab Sampling:
Project Name:	1 week			
Site: P O #	2 days			Job / SDG No.:
	1 day	SW		
Communication of the contract		iltered erform		al a buy days
MACANIN - MOJ - MG 2118-GW	S COCK	N III		Sample Specific Notes:
-067118-1		XWW		
Th/Fm14-021-062119-0511	20	XWX		
F1/Cm11-000-010-010	NIC O		240 07444 0.	
	2011		Control Chain of Custody	
MAN-211790-810-MMANN	W 5 07 M 8 M 70	X		Accept
- WGway				0000
\$\$1mw-003-062118-GW	6-2148 [630 G- W	X MM /	/	
CBLMM -004-062118-GW	621-16 1640 G W	XXX		
	-			
	563			
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other	; 5=NaOH; 6= Other			
Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to disnose of the sample.	ase List any EPA Waste Codes for the sam		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	d longer than 1 month)
Man the state of t	Dolone B			
Non-riazard Hammable Jokin Irritant	Potson 8	Return to Client	nt Disposal by Lab Archive for	Months
opecial instructions/ac requirements a comments:				
Custody Seals Intact: Tyes No	al No.:		Cooler Temp. ("C): Obs'd: Corr'd:	Therm ID No.:
Reinquished by:	Company: Date/Time:	-18/12 Cooked by.	Company.	Date/Time: 7245
:/Sgilnquished by:	Company: Date/Time	Ime: Received by:	Company:	-/Time:
Sinquished by:	Company: Date/Time:	Ime: Received in Laboratory by:	ratory by: Company:	Date/Time:

TestAmerica Canton Sample Receipt Form/Narrative Canton Facility	Login#: 97441				
Client Cardno Site Name	Cooler unpacked by:				
Cooler Received on 6 21 18 Opened on 6 21 18	Ten Bus				
FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmeric	a Courier Other				
	Location				
TestAmerica Cooler #	OtherOtherOtherOtherOtherOC				
Contacted PM Date by vir	a Verbal Voice Mail Other				
Concerning					
17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES					
18. SAMPLE CONDITION					
Sample(s) were received after the recomme	ended holding time had expired.				
Sample(s) were received with bubb	le >6 mm in diameter. (Notify PM)				
19. SAMPLE PRESERVATION					
Sample(s) Preservative(s) added/Lot number(s):	were further preserved in the laboratory.				
Time preserved:Preservative(s) added/Lot number(s):					

Login Sample Receipt Checklist

Client: Cardno GS, Inc Job Number: 240-97441-1

Login Number: 97441 List Source: TestAmerica Canton

List Number: 1 Creator: Burns, Terry

Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	