

## ANALYTICAL REPORT

Job Number: 280-129019-2

Job Description: Leidos RFP# 001088 - Ravenna AAP-66

For:

Leidos, Inc.

Picatinny Arsenal

356 Ninth Avenue

Suite 106

Dover, NJ 07801

Attention: Rita Schmon-Stasik



Approved for release.  
Donna R Rydberg  
Senior Project Manager  
10/8/2019 2:17 PM

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Donna R Rydberg, Senior Project Manager  
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10/08/2019

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.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins TestAmerica Project Manager.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

**Eurofins TestAmerica, Denver**

4955 Yarrow Street, Arvada, CO 80002

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# Definitions/Glossary

Client: Leidos, Inc.  
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Job ID: 280-129019-2

## Qualifiers

### General Chemistry

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum 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
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

## **CASE NARRATIVE**

**Client: Leidos, Inc.**

**Project: Leidos RFP# 001088 - Ravenna AAP-66**

**Report Number: 280-129019-2**

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 10/2/2019 at 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were 0.3° C, 0.4° C, 0.6° C, 0.8° C and 2.2° C.

This report contains the Hexavalent chromium results only as they were performed at the Eurofins TestAmerica North Canton laboratory and they do not have DOD certification. All other tests on the COC will be reported under job 280-129019-1.

### **HEXAVALENT CHROMIUM**

Samples FBQmw-175-191001-GW (280-129019-10) and FBQmw-175-191002-GW (280-129019-11) were analyzed for hexavalent chromium in accordance with EPA SW-846 Method 7196A. The samples were analyzed on 10/01/2019.

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

# Detection Summary

Client: Leidos, Inc.  
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Job ID: 280-129019-2

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**Client Sample ID: FBQmw-175-191001-GW**

**Lab Sample ID: 280-129019-10**

No Detections.

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**Client Sample ID: FBQmw-175-191002-GW**

**Lab Sample ID: 280-129019-11**

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Denver

# Client Sample Results

Client: Leidos, Inc.  
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Job ID: 280-129019-2

## General Chemistry

**Client Sample ID: FBQmw-175-191001-GW**

**Date Collected: 10/01/19 09:41**

**Date Received: 10/02/19 09:30**

**Lab Sample ID: 280-129019-10**

**Matrix: Water**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
Hexavalent chromium	0.010	U	0.020	0.010	0.0070	mg/L	10/01/19 16:57	1

**Client Sample ID: FBQmw-175-191002-GW**

**Date Collected: 10/01/19 09:41**

**Date Received: 10/02/19 09:30**

**Lab Sample ID: 280-129019-11**

**Matrix: Water**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
Hexavalent chromium	0.010	U	0.020	0.010	0.0070	mg/L	10/01/19 16:58	1

# Default Detection Limits

Client: Leidos, Inc.  
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Job ID: 280-129019-2

## General Chemistry

Analyte	RL	MDL	Units
Hexavalent chromium	0.020	0.0070	mg/L



# QC Sample Results

Client: Leidos, Inc.  
 Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Job ID: 280-129019-2

## Method: 7196A - Chromium, Hexavalent

**Lab Sample ID: MB 240-403450/3**  
**Matrix: Water**  
**Analysis Batch: 403450**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
Hexavalent chromium	0.010	U	0.020	0.010	0.0070 mg/L		10/01/19 12:17	1

**Lab Sample ID: LCS 240-403450/4**  
**Matrix: Water**  
**Analysis Batch: 403450**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Hexavalent chromium	0.250	0.271		mg/L		109	80 - 123

**Lab Sample ID: 280-129019-10 MS**  
**Matrix: Water**  
**Analysis Batch: 403450**

**Client Sample ID: FBQmw-175-191001-GWMSD**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Hexavalent chromium	0.010	U	0.250	0.256		mg/L		102	31 - 151

**Lab Sample ID: 280-129019-10 MSD**  
**Matrix: Water**  
**Analysis Batch: 403450**

**Client Sample ID: FBQmw-175-191001-GWMSD**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Hexavalent chromium	0.010	U	0.250	0.257		mg/L		103	31 - 151	1	20

# QC Association Summary

Client: Leidos, Inc.  
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Job ID: 280-129019-2

## General Chemistry

### Analysis Batch: 403450

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-129019-10	FBQmw-175-191001-GW	Total/NA	Water	7196A	
280-129019-11	FBQmw-175-191002-GW	Total/NA	Water	7196A	
MB 240-403450/3	Method Blank	Total/NA	Water	7196A	
LCS 240-403450/4	Lab Control Sample	Total/NA	Water	7196A	
280-129019-10 MS	FBQmw-175-191001-GWMSD	Total/NA	Water	7196A	
280-129019-10 MSD	FBQmw-175-191001-GWMSD	Total/NA	Water	7196A	

# Lab Chronicle

Client: Leidos, Inc.  
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Job ID: 280-129019-2

**Client Sample ID: FBQmw-175-191001-GW**

**Lab Sample ID: 280-129019-10**

**Date Collected: 10/01/19 09:41**

**Matrix: Water**

**Date Received: 10/02/19 09:30**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7196A		1	50 mL	50 mL	403450	10/01/19 16:57	BLW	TAL CAN

**Client Sample ID: FBQmw-175-191002-GW**

**Lab Sample ID: 280-129019-11**

**Date Collected: 10/01/19 09:41**

**Matrix: Water**

**Date Received: 10/02/19 09:30**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7196A		1	50 mL	50 mL	403450	10/01/19 16:58	BLW	TAL CAN

**Laboratory References:**

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

# Accreditation/Certification Summary

Client: Leidos, Inc.  
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Job ID: 280-129019-2

## Laboratory: Eurofins TestAmerica, Denver

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
A2LA	DoD	2907.01	10-31-19

## Laboratory: Eurofins TestAmerica, Canton

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

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-20
Connecticut	State	PH-0590	12-31-19
Florida	NELAP	E87225	06-30-20
Georgia	State	4062	02-23-20
Illinois	NELAP	004498	07-31-20
Iowa	State	421	06-01-20
Kansas	NELAP	E-10336	04-30-20
Kentucky (UST)	State	112225	02-23-20
Kentucky (WW)	State	KY98016	12-31-19
Minnesota	NELAP	OH00048	12-31-19
Minnesota (Petrofund)	State Program	3506	07-31-21
New Jersey	NELAP	OH001	06-30-20
New York	NELAP	10975	03-31-20
Ohio VAP	State	CL0024	06-05-21
Oregon	NELAP	4062	02-23-20
Pennsylvania	NELAP	68-00340	08-31-20
Texas	NELAP	T104704517-18-10	08-31-20
USDA	US Federal Programs	P330-16-00404	12-28-19
Virginia	NELAP	010101	09-14-20
Washington	State	C971	01-12-20
West Virginia DEP	State	210	12-31-19

# Method Summary

Client: Leidos, Inc.  
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Job ID: 280-129019-2

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<b>Method</b>	<b>Method Description</b>	<b>Protocol</b>	<b>Laboratory</b>
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 = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

# Sample Summary

Client: Leidos, Inc.  
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Job ID: 280-129019-2

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
280-129019-10	FBQmw-175-191001-GW	Water	10/01/19 09:41	10/02/19 09:30	
280-129019-11	FBQmw-175-191002-GW	Water	10/01/19 09:41	10/02/19 09:30	

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Canton Job No.: 280-129019-2

SDG No.: \_\_\_\_\_

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
<b>WCCHROME50PM2 00026</b>	12/07/19	06/07/19	DIWATER, Lot 052014	1000 mL	WCKDICHROME62_00008	0.1414 g	Hexavalent chromium	49.9764 mg/L
.WCKDICHROME62_00008	03/26/24		Fisher, Lot 166724		(Purchased Reagent)		Hexavalent chromium	0.35344 g/g
<b>WCCHROME50PPM 00030</b>	03/11/20	09/11/19	DIWATER, Lot 052014	1000 mL	WCKDICHROME62_00006	0.1414 g	Hexavalent chromium	49.9764 mg/L
.WCKDICHROME62_00006	09/19/22		Fisher, Lot 172080		(Purchased Reagent)		Hexavalent chromium	0.35344 g/g

Reagent

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**WCKDICHROME62\_00006**





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 - 0090918

This is to certify that units of the lot number below 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:

<b>Catalog Number</b>	<b>P188</b>	<b>Quality Test / Release Date</b> 3/6/2017	
<b>Lot Number</b>	<b>172080</b>		
<b>Description</b>	<b>POTASSIUM DICHROMATE, A.C.S.</b>		
<b>Country of Origin</b>	<b>United States</b>	<b>* Suggested Retest Date</b>	<b>Mar-2022</b>
<b>Chemical Origin</b>	<b>Inorganic-non animal</b>		
<b>BSE/TSE Comment</b>	No animal products are used as starting raw material ingredients, or used in processing, including lubricants, processing aids, or any other material that might migrate to the finished product.		

Result name	Units	Specifications	Test Value
APPEARANCE		REPORT	Fine, orange-red crystals
ASSAY	%	>= 99	101.4
CALCIUM	%	<= 0.003	0.0010
CHLORIDE	%	<= 0.001	0.0010
IDENTIFICATION	PASS/FAIL	= PASS TEST	PASS TEST
INSOLUBLE MATTER	%	<= 0.005	0.001
IRON (Fe)	%	<= 0.001	0.0010
LOSS ON DRYING @ 105 C	%	<= 0.05	0.01
SODIUM (Na)	%	<= 0.02	0.001
SULFATE (SO4)	%	<= 0.005	0.003



*Jerusa Bailey-Wyche*

**Quality Assurance Specialist - Certificate of Analysis 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.

# GENERAL CHEMISTRY

COVER PAGE  
GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, Canton Job Number: 280-129019-2

SDG No.: \_\_\_\_\_

Project: Leidos RFP# 001088 - Ravenna AAP-66

Client Sample ID	Lab Sample ID
<u>FBQmw-175-191001-GW</u>	<u>280-129019-10</u>
<u>FBQmw-175-191002-GW</u>	<u>280-129019-11</u>

Comments:

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1B-IN  
 INORGANIC ANALYSIS DATA SHEET  
 GENERAL CHEMISTRY

Client Sample ID: FBQmw-175-191001-GW

Lab Sample ID: 280-129019-10

Lab Name: Eurofins TestAmerica, Canton

Job No.: 280-129019-2

SDG ID.: \_\_\_\_\_

Matrix: Water

Date Sampled: 10/01/2019 09:41

Reporting Basis: WET

Date Received: 10/02/2019 09:30

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
18540-29-9	Hexavalent chromium	0.010	0.020	0.0070	mg/L	U		1	7196A

1B-IN  
 INORGANIC ANALYSIS DATA SHEET  
 GENERAL CHEMISTRY

Client Sample ID: FBQmw-175-191002-GW

Lab Sample ID: 280-129019-11

Lab Name: Eurofins TestAmerica, Canton

Job No.: 280-129019-2

SDG ID.: \_\_\_\_\_

Matrix: Water

Date Sampled: 10/01/2019 09:41

Reporting Basis: WET

Date Received: 10/02/2019 09:30

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
18540-29-9	Hexavalent chromium	0.010	0.020	0.0070	mg/L	U		1	7196A

2-IN  
 CALIBRATION QUALITY CONTROL  
 GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, Canton Job No.: 280-129019-2  
 SDG No.: \_\_\_\_\_  
 Analyst: BLW Batch Start Date: 10/01/2019  
 Reporting Units: mg/L Analytical Batch No.: 403450

Sample Number	QC Type	Time	Analyte	Result	Spike Amount	(%) Recovery	Limits	Qual	Reagent
1	CCV	12:16	Hexavalent chromium	0.253	0.250	101	90-110		WCCHROME50PPM_00030
2	CCB	12:16	Hexavalent chromium	0.010				U	
8	CCV	12:21	Hexavalent chromium	0.253	0.250	101	90-110		WCCHROME50PPM_00030
9	CCB	12:21	Hexavalent chromium	0.010				U	
17	CCV	16:07	Hexavalent chromium	0.245	0.250	98	90-110		WCCHROME50PPM_00030
18	CCB	16:08	Hexavalent chromium	0.010				U	
23	CCV	16:59	Hexavalent chromium	0.244	0.250	97	90-110		WCCHROME50PPM_00030
24	CCB	17:00	Hexavalent chromium	0.010				U	

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

3-IN  
METHOD BLANK  
GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, Canton

Job No.: 280-129019-2

SDG No.: \_\_\_\_\_

Method	Lab Sample ID	Analyte	Result	Qual	Units	RL	Dil
Batch ID: 403450 Date: 10/01/2019 12:17							
7196A	MB 240-403450/3	Hexavalent chromium	0.010	U	mg/L	0.020	1

5-IN  
 MATRIX SPIKE SAMPLE RECOVERY  
 GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, Canton Job No.: 280-129019-2

SDG No.: \_\_\_\_\_

Matrix: Water

Method	Lab Sample ID	Analyte	Result	C	Unit	Spike Amount	Pct. Rec.	Limits	RPD	RPD Limit	Q
Batch ID: 403450 Date: 10/01/2019 16:57											
7196A	280-129019-10	Hexavalent chromium	0.010	U	mg/L						
7196A	280-129019-10	Hexavalent chromium	0.256		mg/L	0.250	102	31-151			
	MS										

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



5-IN  
 MATRIX SPIKE DUPLICATE SAMPLE RECOVERY  
 GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, Canton Job No.: 280-129019-2  
 SDG No.: \_\_\_\_\_  
 Matrix: Water

Method	Lab Sample ID	Analyte	Result	C	Unit	Spike Amount	Pct. Rec.	Limits	RPD	RPD Limit	Q
Batch ID: 403450 Date: 10/01/2019 16:58											
7196A	280-129019-10	Hexavalent chromium	0.257		mg/L	0.250	103	31-151	1	20	
	MSD										

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

7A-IN  
 LAB CONTROL SAMPLE  
 GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, Canton Job No.: 280-129019-2

SDG No.: \_\_\_\_\_

Matrix: Water

Method	Lab Sample ID	Analyte	Result	C	Unit	Spike Amount	Pct. Rec.	Limits	RPD	RPD Limit	Q
Batch ID: 403450			Date: 10/01/2019 12:18			LCS Source: WCCHROME50PM2_00026					
7196A	LCS 240-403450/4	Hexavalent chromium	0.271		mg/L	0.250	109	80-123			

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

9-IN  
DETECTION LIMITS  
GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, Canton Job Number: 280-129019-2  
SDG Number: \_\_\_\_\_  
Matrix: Water Instrument ID: OSCAR  
Method: 7196A MDL Date: 06/21/2019 09:09

Analyte	Wavelength/ Mass	RL (mg/L)	MDL (mg/L)
Hexavalent chromium		0.02	0.007

9-IN  
CALIBRATION BLANK DETECTION LIMITS  
GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, Canton Job Number: 280-129019-2  
SDG Number: \_\_\_\_\_  
Matrix: Water Instrument ID: OSCAR  
Method: 7196A XMDL Date: 06/21/2019 09:09

Analyte	Wavelength/ Mass	XRL (mg/L)	XMDL (mg/L)
Hexavalent chromium		0.02	0.007

13-IN  
ANALYSIS RUN LOG  
GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, Canton

Job No.: 280-129019-2

SDG No.: \_\_\_\_\_

Instrument ID: OSCAR

Analysis Method: 7196A

Start Date: 10/01/2019 12:16

End Date: 10/01/2019 17:00

Lab Sample Id	D/F	Type	Time	C r 6	Analytes																			
CCV 240-403450/1	1		12:16	X																				
CCB 240-403450/2	1		12:16	X																				
MB 240-403450/3	1	T	12:17	X																				
LCS 240-403450/4	1	T	12:18	X																				
ZZZZZZ			12:18																					
ZZZZZZ			12:19																					
ZZZZZZ			12:20																					
CCV 240-403450/8	1		12:21	X																				
CCB 240-403450/9	1		12:21	X																				
ZZZZZZ			13:47																					
CCV 240-403450/11			13:48																					
CCB 240-403450/12			13:48																					
ZZZZZZ			14:00																					
CCV 240-403450/14			14:01																					
CCB 240-403450/15			14:01																					
ZZZZZZ			16:06																					
CCV 240-403450/17	1		16:07	X																				
CCB 240-403450/18	1		16:08	X																				
ZZZZZZ			16:49																					
ZZZZZZ			16:49																					
280-129019-10	1	T	16:57	X																				
280-129019-10 MS	1	T	16:57	X																				
280-129019-10 MSD	1	T	16:58	X																				
280-129019-11	1	T	16:58	X																				
CCV 240-403450/23	1		16:59	X																				
CCB 240-403450/24	1		17:00	X																				

Prep Types: \_\_\_\_\_  
T = Total/NA

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Canton Job No.: 280-129019-2

SDG No.: \_\_\_\_\_

Batch Number: 400074 Batch Start Date: 09/11/19 09:01 Batch Analyst: Moser, Morgan

Batch Method: 7196A Batch End Date: 09/11/19 09:15

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	UnCorResp	WCCHROME50PPM 00030		
IC 240-400074/1		7196A		50 mL	50 mL	0 Absorbance			
IC 240-400074/2		7196A		50 mL	50 mL	0.007 Absorbance	0.005 mL		
IC 240-400074/3		7196A		50 mL	50 mL	0.022 Absorbance	0.01 mL		
IC 240-400074/4		7196A		50 mL	50 mL	0.084 Absorbance	0.1 mL		
IC 240-400074/5		7196A		50 mL	50 mL	0.196 Absorbance	0.25 mL		
IC 240-400074/6		7196A		50 mL	50 mL	0.361 Absorbance	0.5 mL		

Batch Notes	
Acid Used for pH Adjustment ID	4276663
Spectrophotometer Cell Path Length	1 cm
Color Reagent ID	4362751
Pipette/Syringe/Dispenser ID	E11

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.

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Canton Job No.: 280-129019-2

SDG No.: \_\_\_\_\_

Batch Number: 403450 Batch Start Date: 10/01/19 12:16 Batch Analyst: Woodward, Bruce

Batch Method: 7196A Batch End Date: 10/01/19 17:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	ColorBlk	UnCorResp	WCCHROME50PM2 00026	WCCHROME50PPM 00030
CCV 240-403450/1		7196A		50 mL	50 mL		0.190 Absorbance		0.25 mL
CCB 240-403450/2		7196A		50 mL	50 mL		0 Absorbance		
MB 240-403450/3		7196A		50 mL	50 mL		0 Absorbance		
LCS 240-403450/4		7196A		50 mL	50 mL		0.203 Absorbance	0.25 mL	
CCV 240-403450/8		7196A		50 mL	50 mL		0.190 Absorbance		0.25 mL
CCB 240-403450/9		7196A		50 mL	50 mL		0 Absorbance		
CCV 240-403450/17		7196A		50 mL	50 mL		0.184 Absorbance		0.25 mL
CCB 240-403450/18		7196A		50 mL	50 mL		0 Absorbance		
280-129019-A-10	FBQmw-175-191001 -GW	7196A	T	50 mL	50 mL	0 Absorbance	0 Absorbance		
280-129019-A-10 MS	FBQmw-175-191001 -GWMSD	7196A	T	50 mL	50 mL	0 Absorbance	0.192 Absorbance	0.25 mL	
280-129019-A-10 MSD	FBQmw-175-191001 -GWMSD	7196A	T	50 mL	50 mL	0 Absorbance	0.193 Absorbance	0.25 mL	
280-129019-A-11	FBQmw-175-191002 -GW	7196A	T	50 mL	50 mL	0 Absorbance	0 Absorbance		
CCV 240-403450/23		7196A		50 mL	50 mL		0.183 Absorbance		0.25 mL
CCB 240-403450/24		7196A		50 mL	50 mL		0 Absorbance		

Batch Notes	
Acid Used for pH Adjustment ID	4276663
Spectrophotometer Cell Path Length	1 cm
Color Reagent ID	4377170
Pipette/Syringe/Dispenser ID	E5

Basis	Basis Description
T	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.

# Subcontract Data



# Shipping and Receiving Documents

# Chain of Custody Record



COC No.: **RVAAP-015-TA**  
 Date: **10/01/2019**

Page | of 1



280-129019 Chain of Custody

Name Leidos  
 Address: 8866 Commons Blvd, Suite 201, Twinsburg, OH 44087  
 Phone Number: (330) 405-5802  
 Project Manager: Jed Thomas  
 Project: RVAAP FWGW Sampling Event Fall 2019  
 Job/P.O. No.: P010216426  
 Sampler (Signature) *[Signature]*

(Printed Name)  
**Tim Runkled**

Laboratory No.	Sample ID	Site Type	Depth	Date	Time	Matrix
	DET-003-191001-GW			10/01/19	1020	W
	DET-003-191001-GWMSD			10/01/19	1020	W
	DET-003-191002-GW			10/01/19	1020	W
	FWGTB-191009-TB			10/01/19	0940	W

Requested Parameters	VOCs (1)(B)	Phthalates/Nitroaromatics/Phenols (2)(A)	LL PAHs (3)(A)	PCBs (4)(A)	Pesticides (5)(A)	Explosives (6)(A)	Cyanide (8)(D)	TAL Metals (7)(C)	Temperature Blank	Total Number of Containers
	3	2	2	2	2	2	1	1		13
	4	4	4	4	4	1				17
	3	2	2	2	2	1				8
	2									2

Laboratory Name: Test America - Canton  
 Address: 4101 Shuffel St NW  
 North Canton, OH 44720  
 Phone: (330) 497-9396  
 Fax:  
 Contact:

OBSERVATIONS, COMMENTS  
 SPECIAL INSTRUCTIONS  
 Extra Volume for MGMSD  
 Trip Blank

Relinquished by	Date	Time	Received by	Date	Time
<i>[Signature]</i>	10/01/19	1500	<i>[Signature]</i>	10/2/19	0930
<i>[Signature]</i>			<i>[Signature]</i>		

Notes:  
 A. Cool, 4C  
 B. HCl, pH<2, Cool, 4C  
 C. HNO3, pH<2, Cool, 4C  
 D. NaOH, pH>12, Cool 4C  
 Notes:  
 1. SW 8260B  
 2. SW 8270D  
 3. SW 8270D SIM  
 4. SW 8082A  
 5. SW 8081B  
 6. SW 8330  
 7. SW 6010/6020/7470  
 8. SW 9012B  
 9. SW 9034  
 10. SW 9056/9056A  
 11. SW 6860  
 12. EPA 353.2  
 13. SW 7196  
 14. SM2320B

ETA-DEN  
 Cooler Temp.:  
 0.010, 8, 0.3, 0.1, 2.2  
 + IR# 8  
 Temperature Blank  
 10/2/19

Lab:  
 Leidos  
 8866 Commons Drive  
 Twinsburg, OH 44087  
 (330) 405-5802

White: Laboratory      Pink: Project Manager      Yellow: Project QAO      Goldenrod: Field Project Manager



# Chain of Custody Record

COC No.: RVAAP-014-TA

Date: 10/01/2019

Page 1 of 1

Name Leidos  
 Address: 8866 Commons Blvd, Suite 201, Twinsburg, OH 44087  
 Phone Number: (330) 405-5802  
 Project Manager: Jed Thomas  
 Project: RVAAP FWGW Sampling Event Fall 2019  
 Job/P.O. No.: P010216426  
 Sampler (Signature) *[Signature]* (Printed Name) Charles S. Ruck

Laboratory No.	Sample ID	Site Type	Depth	Date	Time	Matrix
DET-004-191001-GW				10/1/2019	14:48	W

Requested Parameters	VOCS (1)(B)	Phenols (2)(A)	Phthalates/Nitroaromatics	LL PAHs (3)(A)	PCBs (4)(A)	Pesticides (5)(A)	Explosives (6)(A)	Cyanide (8)(D)	TAL Metals (7)(C)	Temperature Blank	Total Number of Containers
	3	2	2	2	2	2	2	1	1	13	13

OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
associated with Trip Blank FWGTB-191009-TB

Relinquished by <i>[Signature]</i> Printed Name Hester Adams Leidos Company	Date 10/01/19 Time 1500	Received by <i>[Signature]</i> Printed Name O. A. Odajaja Company ETA-DEN	Date 10/2/19 Time 0930	Notes: A. Cool, 4C B. HCl, pH<2, Cool, 4C C. HNO3, pH<2, Cool, 4C D. NaOH, pH>12, Cool 4C 1. SW 8260B 2. SW 8270D 3. SW 8270D SIM 4. SW 8082A 5. SW 8081B 6. SW 8330 7. SW 6010/6020/7470 8. SW 9012B 9. SW 9034 10. SW 9056/9056A 11. SW 6860 12. EPA 353.2 13. SW 7196 14. SM2320B	Total Number of Containers: 13	Shipment Method: Courier
Relinquished by <i>[Signature]</i> Printed Name Leidos Company	Date  Time 	Received by <i>[Signature]</i> Printed Name Company	Date  Time 	Notes: Temperature Blank Lab: Leidos 8866 Commons Drive Twinsburg, OH 44087 (330) 405-5802		





# Chain of Custody Record

COC No.: **RVAAP-001-TA**

Date: **09/30/2019**

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Laboratory Name: Test America - Canton  
 Address: 4101 Shuffel St NW  
 North Canton, OH 44720  
 Phone: (330) 497-9396  
 Fax:  
 Contact:

OBSERVATIONS, COMMENTS  
 SPECIAL INSTRUCTIONS

Requested Parameters	Total Number of Containers	Shipment Method:
Cyanide (8)(D)	1	Courier
Temperature Blank	1	

Name Leidos  
 Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087  
 Phone Number: (330) 405-5802  
 Project Manager: Jed Thomas  
 Project: RVAAP FWGW Sampling Event Fall 2019  
 Job/P.O. No.: P010216426

Sampler (Signature) *[Signature]* (Printed Name) **CHARLES SQUILL**

Laboratory No. **CBPmw-008-191001-GW** Site Type **GW** Date **9/30/19** Time **1412** Matrix **W**

Retrieved by *[Signature]* Date **10/01/2019** Time **1500**

Received by *[Signature]* Date **10/2/19** Time **0930**

Printed Name **O. Aurologa** Company **ETA-DEH**

Relinquished by *[Signature]* Date **10/01/2019** Time **1500**

Signature *[Signature]* Printed Name **Charles Squill** Company **Leidos**

Relinquished by *[Signature]* Date **10/01/2019** Time **1500**

Signature *[Signature]* Printed Name **Charles Squill** Company **Leidos**

Notes:  
 A. Cool, 4C  
 B. HCl, pH<2, Cool, 4C  
 C. HNO3, pH<2, Cool, 4C  
 D. NaOH, pH>12, Cool 4C  
 Notes:  
 1. SW 8260B  
 2. SW 8270D  
 3. SW 8270D SIM  
 4. SW 8082A  
 5. SW 8081B  
 6. SW 8330  
 7. SW 6010/6020/7470  
 8. SW 9012B  
 9. SW 9034  
 10. SW 9056/9056A  
 11. SW 6860  
 12. EPA 353.2  
 13. SW 7196  
 14. SM2320B

Temperature Blank

Lab:  
**Leidos**  
 8866 Commons Drive  
 Twinsburg, OH 44087  
 (330) 405-5802

White: Laboratory      Pink: Project Manager      Yellow: Project CAO      Goldenrod: Field Project Manager





# Chain of Custody Record

COC No.: **RVAAP-011-TA**


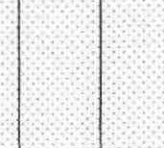
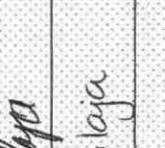
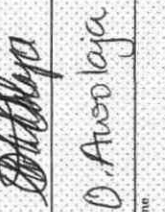
Page | of 1

Date: **09/30/2019**

Name Leidos  
 Address: 8866 Commons Blvd, Suite 201, Twinsburg, OH 44087  
 Phone Number: (330) 405-5802  
 Project Manager: Jed Thomas  
 Project: RVAAP FWGW Sampling Event Fall 2019  
 Job/P.O. No.: P010216426  
 Sampler (Signature) \_\_\_\_\_ (Printed Name)

Laboratory Name: Test America - Canton  
 Address: 4101 Shuffel St NW  
 North Canton, OH 44720  
 Phone: (330) 497-9396  
 Fax: \_\_\_\_\_  
 Contact: \_\_\_\_\_

OBSERVATIONS, COMMENTS  
 SPECIAL INSTRUCTIONS

Laboratory No.	Sample ID	See Type	Depth	Date	Time	Matrix	Requested Parameters		Total Number of Containers	Shipment Method:	Courier
							Cyanide (b)(D)	Temperature Blank			
	CBPmw-009-191001-GW			9/30/19	1527	W	1	1			
											
Relinquished by	Signature	Date	Received by	Signature	Date	Notes:					
		10/01/19			10/2/19	A. Cool, 4C B. HCl, pH<2, Cool, 4C C. HNO3, pH<2, Cool, 4C D. NaOH, pH>12, Cool, 4C					
	Printed Name	Time	Printed Name	Printed Name	Time	Notes:					
	Matthew Adams	1500P	ETA-DEN	ETA-DEN	0930	1. SW 8260B 2. SW 8270D 3. SW 8270D SIM 4. SW 8082A 5. SW 8081B 6. SW 8330 7. SW 6010/6020/7470 8. SW 9012B 9. SW 9034 10. SW 9056/9056A 11. SW 6860 12. EPA 353.2 13. SW 7196 14. SM2320B					
Leidos	Company	Date	Received by	Signature	Date	Notes:					
Relinquished by	Signature	Date	Received by	Signature	Date	Notes:					
Signature	Printed Name	Time	Signature	Printed Name	Time	Notes:					
Leidos	Company	Date	Received by	Signature	Date	Notes:					
Relinquished by	Signature	Date	Received by	Signature	Date	Notes:					
Signature	Printed Name	Time	Signature	Printed Name	Time	Notes:					
Leidos	Company	Date	Received by	Signature	Date	Notes:					

Temperature Blank  
 Lab:  
 Leidos  
 8866 Commons Drive  
 Twinsburg, OH 44087  
 (330) 405-5802

White: Laboratory Pink: Project Manager Yellow: Project QAO Goldenrod: Field Project Manager  
 Leidos



# Chain of Custody Record

COC No.: **RVAAP-013-TA**

Date: **10/1/2019**

Page of 1

Name Leidos  
 Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087  
 Phone Number: (330) 405-5802  
 Project Manager: Jed Thomas  
 Project: RVAAP FWGW Sampling Event Fall 2019  
 Job/P.O. No.: P010216426  
 Sampler (Signature) *[Signature]* (Printed Name) **Ren Urich**

Laboratory Name: Test America - Canton  
 Address: 4101 Shuffel St NW  
 North Canton, OH 44720  
 Phone: (330) 497-9396  
 Fax:  
 Contact:

OBSERVATIONS, COMMENTS  
 SPECIAL INSTRUCTIONS

Laboratory No.	Sample ID	Site Type	Depth	Date	Time	Matrix
	FBQmw-172-191001-GW			10/1/19	1233	W
	FBQmw-172-191002-GW					W

Requested Parameters	Cyanide (B/D)	Temperature Blank	Total Number of Containers
	1		1
	1		1

Relinquished by *[Signature]*  
 Signature: **Heather Adams**  
 Printed Name: **Heather Adams**  
 Leidos  
 Company

Received by *[Signature]*  
 Signature: **O. Avudolaja**  
 Printed Name: **O. Avudolaja**  
 Leidos  
 Company

Relinquished by *[Signature]*  
 Signature: **ETA-DEN**  
 Printed Name: **ETA-DEN**  
 Leidos  
 Company

Received by *[Signature]*  
 Signature: **ETA-DEN**  
 Printed Name: **ETA-DEN**  
 Leidos  
 Company

Notes:  
 A. Cool, 4C  
 B. HCl, pH<2, Cool, 4C  
 C. HNO3, pH<2, Cool, 4C  
 D. NaOH, pH>12, Cool 4C  
 1. SW 8260B  
 2. SW 8270D  
 3. SW 8270D SIM  
 4. SW 8082A  
 5. SW 8081B  
 6. SW 8330  
 7. SW 6010/6020/7470  
 8. SW 9012B  
 9. SW 9034  
 10. SW 9056/9056A  
 11. SW 6860  
 12. EPA 353.2  
 13. SW 7196  
 14. SM2320B

Shipment Method: Courier  
 Temperature Blank  
 Lab:  
**Leidos**  
 8866 Commons Drive  
 Twinsburg, OH 44087  
 (330) 405-5802



# Chain of Custody Record

COC No.: **RVAAP-D/2-TA**

Date: **10/01/2019**

Page 1 of 1

Name Leidos  
 Address: 8866 Commons Blvd, Suite 201, Twinsburg, OH 44087  
 Phone Number: (330) 405-5802  
 Project Manager: Jed Thomas  
 Project: RVAAP FWGW Sampling Event Fall 2019  
 Job/P.O. No.: P010216426  
 Sampler (Signature) *[Signature]* (Printed Name)

Laboratory No.	Sample ID	Site Type	Depth	Date	Time	Matrix	Requested Parameters			OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
							Sulfide (9)(E)	Nitrate/Nitrite/Sulfate (10)(A)	Alkalinity (14)(A)	
	FBQmw-175-191001-GW			10/1/19	0941	W	1	1	3	Cr6 24 hr HT bottles stay at No. CANTON
	FBQmw-175-191001-GW/MSD					W			2	Cr6 24 hr HT bottles stay at No. CANTON
	FBQmw-175-191002-GW					W			1	Cr6 24 hr HT bottles stay at No. CANTON
<i>[Large Signature]</i>										
* Hexavalent Cr analysis performed at No Canton										
Total Number of Containers: 6										
Temperature Blank										
Hexavalent Chromium (13)(A) *										
Laboratory Name: Test America - Canton Address: 4101 Shuffel St NW North Canton, OH 44720 Phone: (330) 497-9396 Fax: Contact:										

Relinquished by	Date	Received by	Date	Notes:	Shipment Method:
<i>[Signature]</i>	10/01/19	<i>[Signature]</i>	10/2/19	A. Cool, 4C B. HCl, pH<2, Cool, 4C C. HNO3, pH<2, Cool, 4C D. NaOH, pH>12, Cool 4C	Courier
Signature	Time	Signature	Time	Notes:	
<i>[Signature]</i>	1500	O. Avudolaja	0930	1. SW 8260B 2. SW 8270D 3. SW 8270D SIM 4. SW 8082A 5. SW 8081B 6. SW 8330 7. SW 6010/6020/7470 8. SW 9012B 9. SW 9034 10. SW 9056/9056A 11. SW 6860 12. EPA 353.2 13. SW 7196 14. SM2320B	
Printed Name	Date	Printed Name	Date		
Leidos		ETA-DEN			
Company		Company			
Relinquished by	Date	Received by	Date		
Signature	Time	Signature	Time		
Printed Name	Date	Printed Name	Date		
Company		Company			





Environment Testin  
TestAmerica



Environment Testing  
TestAmerica

ORIGIN ID:PHDA (330) 312-0176  
EUROFINS TESTAMERICA CANTON  
4101 SHUFFEL STREET NW  
NORTH CANTON, OH 447206900  
UNITED STATES US

ORIGIN ID:PHDA (330) 312-0176  
EUROFINS TESTAMERICA CANTON  
4101 SHUFFEL STREET NW  
NORTH CANTON, OH 447206900  
UNITED STATES US

SHIP DATE: 01OCT19  
ACTWGT: 50.00 LB MAN  
CAD: 0562057/CAFE3211

BILL RECIPIENT

TO ENVIRONMENTAL SAMPLE RECEIPT  
TESTAMERICA DENVER  
4955 YARROW STREET

TO ENVIRONMENTAL SAMPLE RECEIPT  
TESTAMERICA DENVER  
4955 YARROW STREET

ARVADA CO 80002

(330) 421-6611 REF: S240-64998  
DEPT. AL HAIDET

ARVADA CO 80002

(330) 421-6611 REF: S240-64998  
DEPT. AL HAIDET



2 of 5  
MPS# 1103 6124 7155  
0263 Mstr# 1103 6124 7144

WED - 02 OCT 10:30A  
PRIORITY OVERNIGHT

NA WHHA  
80002  
CO-US DEN



1 of 5  
TRK# 1103 6124 7144  
0201 ## MASTER ##

WED - 02 OCT 10:30A  
PRIORITY OVERNIGHT

NA WHHA  
80002  
CO-US DEN



280-129019 Waybill

# Login Sample Receipt Checklist

Client: Leidos, Inc.

Job Number: 280-129019-2

**Login Number: 129019**

**List Source: Eurofins TestAmerica, Denver**

**List Number: 1**

**Creator: Awolaja, Oluwademilade A**

<b>Question</b>	<b>Answer</b>	<b>Comment</b>
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
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?	True	
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.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	