908 North Temperance Ave. ∇ Clovis, CA 93611 ∇ Phone 559-275-2175 ∇ Fax 559-275-4422

Certification Number: CA1312
NELAP Certification number: CA00046
DoD-ELAP Certificate number: 4064.01

Data Validatable Report

December 9, 2021

AECOM
1001 Bishop Street, Suite 1600
Honolulu, Hawaii 96813

Attn: Alethea Ramos

Title: Report of Data: Case 98382

Project: 60571032 CV18F0126 Red Hill Fuel Storage, HI

Contract #: Prime contract # for DoD: NAVY CLEAN N62742-17-F-1800, CV18F0126
Subcontract: 18S-22209-HI27

Dear Ms. Ramos:

One water sample was received December 3, 2021. Written results for the requested analyses are being provided on this December 9, 2021.

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

If you have any questions or require further information, please contact your APPL Project Manager, Libby Cheeseborough, libby@applinc.com, at your convenience. Thank you for choosing APPL, Inc.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. These test results meet all requirements of NELAC and DoD QSM. Release of the hard copy has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Loren Portwood, Laboratory Director
APPL, Inc.

LP/lac
Enclosure
cc: File

Data Validation Package
for
60571032 CV18F0126 Red Hill Fuel Storage
APPL SDG 98382
TABLE OF CONTENTS

LABORATORY NAME: *APPL, Inc.*

CASE NARRATIVE

Case Narrative

ARF: 98382

Project: 60571032 CV18F0126 Red Hill Fuel Storage. HI

Sample Receipt Information:

One water sample was received December 3, 2021 at 0.1°C. The sample group was assigned Analytical Request Form (ARF) number 98382.

Sample Preparation and Analysis Information:

For the EPA 9060A analysis, the samples were prepared according to the methods.

Only the portion of the injection log relative to these samples is included. A full sequence log is available upon request. Measurement uncertainty can be reported upon request.

Analytical Exceptions, Deviations and Abnormalities.

None.

SDG	Received	Client ID	APPL ID	Collected DateTime	Matrix	Method	Method Description
98382	12/3/2021	ERH2016	BA47126	12/2/2021 11:36:00 AM	WATER	SW846 9060A	9060A TOC

Abbreviations and Flags

FLAG	DESCRIPTION
#	Recovery or RPD outside control limits
*	Recovery or RPD outside control limits
B	Analyte detected in associated method blank
C1	Reason for correction: wrote incorrect response
C2	Reason for correction: calculated incorrectly
C3	Reason for correction: needs to be rechecked
C4	Reason for correction: data not usable
DO	Diluted out
E	Exceeds linear range
F	Estimated value
G1	Includes a wide range of hydrocarbons which does not match our gasoline standard
G10	Includes a match to hydrocarbon profiles within the range of mineral spirits
G11	Includes a match to hydrocarbon profiles within the range of JP-4
G12	Pattern does not match the gasoline standard; the carbon range for this sample is consistent with JP8
G13	Closely resembles the hydrocarbon profile of aviation gasoline
G14	Analyte concentration may be biased due to carry over
G2	Closely resembles the boiling point hydrocarbon profile consistent with weathered gasoline
G3	Includes higher boiling hydrocarbons
G4	Includes dominant peak(s) not indicative of petroleum hydrocarbons
G5	Is mainly dominant peak(s) not indicative of petroleum hydrocarbons
G6	Contains recognizable contaminant peak(s) which has been removed from quantitation
G7	Is mainly a match to hydrocarbons within the range of gasoline
G8	Closely resembles the boiling point hydrocarbon profile consistent with weathered gasoline
G9	Includes hydrocarbons within the range of kerosene
J	Estimated value
M	Matrix effect
MI1	Manual integration: integration does not follow baseline
MI2	Manual integration: non-target peak interference
MI3	Manual integration: to split a peak that was integrated as one peak by the computer
MI4	Manual integration: to integrate a split peak
MI5	Manual integration: the whole peak or part of the peak was not integrated
MI6	Manual integration: computer integrated wrong peak
MI7	Manual integration: other - explain
MDL	Method detection limit
ND	Not detected
NT	Non-target
Q	Acceptance criteria not met
T1 I	Includes wide range of hydrocarbons not indicative of diesel
T1 M	Is mainly wide range of hydrocarbons not necessarily indicative of diesel
T2 I	Includes lower boiling hydrocarbons, i.e. mineral spirits, kerosene, stoddard solvent, white gas
T2 M	Is mainly lower boiling hydrocarbons, i.e. mineral spirits, kerosene, stoddard solvent, white gas
T3 I	Includes higher boiling hydrocarbons, i.e. asphaltene, waster oil, motor oil, or weathered diesel fuel
T3 M	Is mainly higher boiling hydrocarbons, i.e. asphaltene, waster oil, motor oil, or weathered diesel fuel
T4 I	Includes dominant peak(s) not indicative of hydrocarbons
T4 M	Is mainly dominant peak(s) not indicative of hydrocarbons
T5	Contains recognizable contaminant peak(s) which has been removed from quantitation
T6	Is mainly a match to hydrocarbons within range of diesel fuel
T7	Closely resembles the boiling point hydrocarbon profile consistent with diesel fuel
T8	Includes a match to hydrocarbon profiles within range of diesel and kerosene fuel
T9 I	Includes non-diesel hydrocarbons within boiling point range of diesel fuel
T9 M	Is mainly non-diesel hydrocarbons within boiling point range of diesel fuel.
Y	Percent difference between primary and confirmation column > 40%

SAMPLE RECORDS MANAGEMENT

CHAIN OF CUSTODY,

ARF, CRF, AND

CLIENT COMMUNICATION

APPL - Analysis Request Form 98382

Client: **AECOM**
Address: **1001 Bishop Street, Suite 1600**
Honolulu, HI 96813
Attn: **Alethea Ramos**
Phone: **808-954-4536** Fax: **808-523-8950**
Job: **60571032 CV18F0126 Red Hill Fuel Storage**
PO #: **18S-22209-HI27 PO# 102604**
Chain of Custody (Y/N): **Y** # **53090**
RAD Screen (Y/N): **Y** pH (Y/N): **N**
Turn Around Type: **1 WEEK**

Received by: **MSA**
Date Received: **12/03/21** Time: **11:35**
Delivered by: **FEDEX**
Shuttle Custody Seals (Y/N): **Y** Time Zone: **-10**
Chest Temp(s): **0.1°C**
Color: **K-PurpleYellow**
Samples Chilled until Placed in Refrig/Freezer: **Y**
Project Manager: **Libby Cheesebor**
QC Report Type: **DVP4DOD/EQUIS/HI**
Due Date: **12/10/21**

Comments:
PM: login and F1s to Margie.Pascua@aecom.com & alethea.ramos@aecom.com
PM: For Drinking Water DOC, use $5310CD.
AN: 7 day TAT for Form 1s; 21 day TAT for PKG STYLE 1; DOD v5.1; DOD Forms: LOD database
Report MS/MSD/DUPs when AECOM sample used
Wetlab: EPA 300 (NO3, Br,F,CL,SO4). EPA 353.2 (TOXN).
8260: BTEX & TPH-G only; 8270 SIM: 1-methylnaphthalene, 2-methylnaphthalene & naphthalene only.
TPH-D/O both with and w/o SGC, reverse surrog for SGC; analyze SGC if detections. DO NOT Q-DELETE.
RSK: Methane only; 8011: EDB only; $87DC53W5: report phenol + TICs
FR: email ftp info to Margie, alethea.ramos@aecom.com, Stella, trommelfanger@lab-data.com & jcanlas

Sample Distribution:
Wetlab: 1-$TOCW53

Charges:

Invoice To:
ACCOUNTS PAYABLE
1001 Bishop Street, Ste 1600
USAPImaging@aecom.com
mary.basano@aecom.com

	Client ID	APPL ID	Sampled	Analyses Requested
1.	ERH2016	BA47126W LCSD	12/02/21 11:36	$TOCW53 -- See Comments

Note: All times, excluding sample collection times, are Pacific Time Zone unless noted otherwise. Collection times are in: -10 UTC

APPL Sample Receipt Form

ARF# **98382**

Sample	Container Type	Count	p	Sample	Container Type	Count	p
BA47126	32 Clear VOA - H2SO4	2	NA				

98382

1/1

APPL, Inc.
908 N Temperance Ave
Clovis, CA 93611
www.applinc.com

Phone: (559) 275-2175
Fax: (559) 275-4422
coc@applinc.com

CHAIN OF CUSTODY RECORD

C.O.C. 53090 NOI-FCCS

Report to: PLEASE PRINT	Invoice to: PLEASE PRINT
Company Name: AECOM	Company Name: AECOM
Phone: 808-521-3051	Phone: 808-521-3051
Address: 1001 Bishop St., Ste. 1600 Honolulu, HI 96813	Address: 1001 Bishop St., Ste. 1600 Honolulu, HI 96813
Fax:	Fax:
Attn: Alethea Ramos	Attn: Sheree.Smith@aecom.com (Sheree Smith)
Email: Alethea.Ramos@aecom.com	Email: USAImaging@aecom.com

Project Name/Number	Sampler (Print)
60571032.02.21.01	MY, GM, DM, AD
Purchase Order Number	**Sampler (Signature)**
102604	Matthew Yim

Sample Identification	Location	Date Collected	Time Collected	Time Zone	No. of Containers	Matrix: Aq	Matrix: Sed.	Matrix: Soil	Analysis Requested/Method Number: TOC by 9060
10 of 21 RH2016	RHMN15-05	12/2/21	1136	HST	2	J			X

Date Shipped: 12/2/21
Carrier: FedEx
Waybill No.:
Comments:
Note: Log NOI in separate SDGs from other COCs

MY 12/2/21

Shuttle Temperature: RJ: 2.0/0.1°C

Turnaround Requested: Check one
☐ Standard 2-3 wk ☑ One week ☐ 3 days ☐ 24/48 Hrs. ☐ Other:

Sample Disposal:
☐ Return to client ☑ Disposal by Lab (30-day retention)

Relinquished by sampler:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Matthew Yim	12/2/21	1530					
Relinquished by:	**Date**	**Time**	**Received by:**	**Relinquished by:**	**Date**	**Time**	**Received at lab by:**
					12-3-21	1135	Dallas Holmes

White: Return to client with report Yellow: Laboratory Copy See reverse side for Container Preservative and Sampling Information

COOLER RECEIPT FORM **ARF: 98382**

1) Project: 60571032 CV18F0126 Red Hill Fuel Storage Date Received: 12/3/2021

2) Coolers: Number of Coolers: 1

3) YES Were custody seals present and intact?
How many? 2 Name/Date on seal? SEE BELOW

4) YES Was there a shipping slip? Carrier name: FEDEX

5) Type of packing in cooler: X bubble wrap __ popcorn __ foam X plastic bags __ other
X wet ice __ dry ice __ no ice __ gel ice

6) YES Were cooler temperatures acceptable?

7) Serial number of calibrated thermometer used: R3 CF:-1.9°C

8) Cooler temp(s): In °C. Thermometer Temp / Corrected Temp
1: 2.0/0.1 2: _____ 3: _____ 4: _____ 5: _____ 6: _____
7: _____ 8: _____ 9: _____ 10: _____ 11: _____ 12: _____

Chain of custody:

9) YES Was a chain of custody received?

10) YES Were the custody papers complete/signed in the appropriate places?

Sample Labels:

11) YES Were all sample labels complete (sample ID, date/time of sampling, etc.)?

12) YES Did all container labels agree with custody papers?

Sample Containers:

13) YES Were all containers sealed in separate bags?

14) YES Did all containers arrive in good condition:(unbroken, no leakage, no cracked/broken lids)?

15) YES Were correct containers and preservatives used for the tests indicated?

16) YES Was a sufficient amount of sample sent for tests indicated?

17) ~~NA~~ ~~No~~ Were bubbles present in volatile samples?
If yes, the following were received with air bubbles:
Larger than a pea: _____
Smaller than a pea: _____

Preservation Hold time:

18) Yes Was a sufficient amount of holding time remaining to analyze the samples?

19) NA Was the pH taken of all non-VOA preserved samples and written on the sample container?

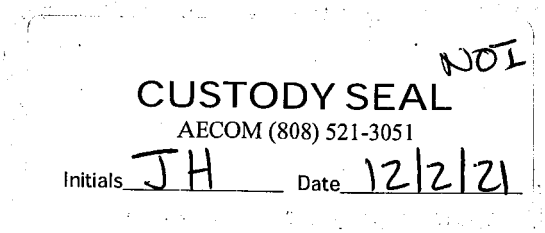
20) NA Was the pH of acid preserved non-VOA samples < 2?

21) NA Was the pH of the "basic" preserved samples for Cyanide > 12, Sulfide >9, Hexchrom >9?

22) NO Were unpreserved VOA Vials received for VOA Dept analysis?

23) NA If "yes", are the unpreserved VOA vials noted in the ADD TEST FIELD on the ARF?
pH strip lot number: _____
Lab notified if pH was not adequate: _____

Notes/Deficiencies:



Personnel receiving samples: DH Second reviewer: MS
Personnel labeling samples: CH
Project manager notified: DH Date/Time of notification 12/3/2021
Name of client notified: _____ Date/Time of notification _____

SAMPLE RESULTS

Wet Lab Analysis

AECOM
1001 Bishop Street, Suite 1600
Honolulu, HI 96813

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Alethea Ramos

Project: 60571032 CV18F0126 Red Hill Fuel Storage

Sample ID: ERH2016

APPL ID: BA47126

Sample Collection Date: 12/2/2021

ARF: 98382

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
SW846 9060A	TOTAL ORGANIC CARBON	4.5	0.93	0.350	0.130	mg/L	1	12/06/21	12/06/21

Printed: 12/8/2021 8:07:32 AM

APPL-F1-SC-NoMC-REG MDLs

QC FORMS

SW846 9060A

Form 4

Blank Summary

Lab Name:	APPL, Inc.	SDG No:	98382
Case No:	98382	Date Analyzed:	12/6/2021
Matrix:	WATER	Instrument:	TICTOC
Blank ID:	211206A-BLK	Time Analyzed:	1905

APPL ID.	Client Sample No.	File ID.	Date Analyzed
211206A-LCS	Lab Control Spike	21	12/6/2021 1824
211206A-BLK	Blank	22	12/6/2021 1905
BA47126	ERH2016	23	12/6/2021 2026
211206A-LCSD	Lab Control SpikeD	32	12/7/2021 0314

Comments: Batch: #TOCW5-211206A

WETLAB BLANK

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Analyte	Result	LOQ	LOD	DL	Units	Prep Date	Analysis Date	QC Group
SW846 90	TOTAL ORGANIC C	0.350 U	0.93	0.350	0.130	mg/L	12/06/21	12/06/21	#TOCW5-211206A-BA47126

Wetlab SC-Blank-REG MDLs
Printed: 12/8/2021 8:07:31 AM

SW846 9060A

Form 4

LCS Summary

Lab Name:	APPL, Inc.	SDG No:	98382
Case No:	98382	Date Analyzed:	12/6/2021
Matrix:	WATER	Instrument:	TICTOC
LCS ID:	211206A-LCS	Time Analyzed:	1824

APPL ID.	Client Sample No.	File ID.	Date Analyzed
211206A-LCS	Lab Control Spike	21	12/6/2021 1824
211206A-BLK	Blank	22	12/6/2021 1905
BA47126	ERH2016	23	12/6/2021 2026
211206A-LCSD	Lab Control SpikeD	32	12/7/2021 0314

Comments: Batch: #TOCW5-211206A

Laboratory Control Spike Recoveries

WETLAB

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Compound Name	Spike Lvl mg/L	SPK Res mg/L	DUP Res mg/L	SPK % Recov	DUP % Recov	RPD	RPD Max	QC Limits	Extract Date-Spk	Analysis Date-Spk	Extract Date-Dup	Analysis Date-Dup	QC Group
SW846 90	TOTAL ORGANIC CARBO	5.00	5.31	5.11	106	102	3.8	20	80-120	12/06/21	12/06/21	12/07/21	12/07/21	#TOCW5-211206A-BA471

Comments:

INORGANIC ANALYSIS
Calibration and Raw Data

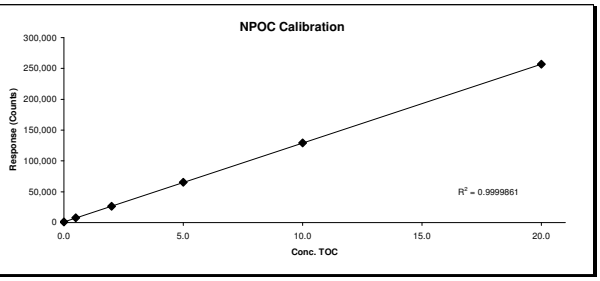
TOTAL ORGANIC CARBON

Method: WetChem | Units mg/L | Instrument: Tic Toc

Analyte: TOC | QCG: 211206A

Analyist: EA | Final Volume: 40mL

Date	Time	Appl ID	[TOC]	Raw	% Recovery
11/27/2021	13:37	QC blank	0.00	872	
11/27/2021	16:18	Ical 1	0.50	7728	
11/27/2021	16:58	Ical 2	2.00	26223	
11/27/2021	17:38	Ical 3	5.00	65575	
11/27/2021	18:19	Ical 4	10.00	129337	
11/27/2021	19:00	Ical 5	20.00	256854	
11/27/2021	19:41	ICB	0.05	1142	
11/27/2021	20:21	ICV	9.90	127224	99.0%



Date	Time	Appl ID	DF	Raw Result	SubSample Amount	Filter Blank Subtract	Calc Conc	Result	Range (mg/L)	QC True	% Recovery
2021-12-06	05:02 PM	CCB Prime	1	1448	40mL	0.000	0.074	0.07	0.09		
2021-12-06	05:43 PM	QCB	1	1067	40mL	0.000	0	0.00	0.00		
2021-12-06	06:24 PM	211206A CCV/LCS 1	1	69022	40mL	0.000	5.309	5.31	0.17	5.00	106.2%
2021-12-06	07:05 PM	211206A CCB/Blk 1	1	1166	40mL	0.000	0.011	0.01	0.04		
2021-12-06	08:26 PM	BA47126W01 53	1	57906	40mL	0.000	4.486	4.49	1.28		
2021-12-06	09:08 PM	BA47129W01 53	1	15406	40mL	0.000	1.165	1.17	0.44		
2021-12-06	09:50 PM	BA47128W05 53	1	97071	40mL	0.000	7.546	7.55	2.01		
2021-12-06	10:32 PM	BA47130W01 53	1	7307	40mL	0.000	0.532	0.53	0.63		
2021-12-06	11:12 PM	BA47134W05 53	1	101986	40mL	0.000	7.93	7.93	3.38		
2021-12-06	11:52 PM	BA47136W01 53	1	7182	40mL	0.000	0.523	0.52	1.22		
2021-12-07	12:32 AM	BA47132W05 53	1	30465	40mL	0.000	2.341	2.34	1.91		
2021-12-07	01:13 AM	BA47135W01 53	1	3603	40mL	0.000	0.242	0.24	0.46		
2021-12-07	01:53 AM	BA39118W03 TOC	1	57515	40mL	0.000	4.455	4.46	0.02		
2021-12-07	03:14 AM	211206A CCV/LCSD 2	1	66453	40mL	0.000	5.109	5.11	0.09	5.00	102.2%
2021-12-07	03:55 AM	211206A CCB 2	1	1213	40mL	0.000	0.017	0.02	0.06		
2021-12-07	04:36 AM	BA39119W03 TOC	1	66957	40mL	0.000	5.194	5.19	0.10		
2021-12-07	05:59 AM	BA39120W03 TOC	1	57767	40mL	0.000	4.475	4.48	0.18		
2021-12-07	07:20 AM	BA38690W03 TOC	1	16966	40mL	0.000	1.287	1.29	0.11		
2021-12-07	08:41 AM	BA39117W03 TOC	1	68643	40mL	0.000	5.325	5.33	0.11		
2021-12-07	10:08 AM	BA38683W03 TOC	1	39813	40mL	0.000	3.072	3.07	0.04		
2021-12-07	11:30 AM	211206A CCV 3	1	65847	40mL	0.000	5.061	5.06	0.01	5.00	101.2%
2021-12-07	12:11 PM	211206A CCB 3	1	1049	40mL	0.000	0.007	0.01	0.03		

Name of Final Standard TOC Calibration Curve — **Prep'd By (Initials)** EA

Prep Date 11/27/2021

Exp Date 11/27/2022

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from contianer Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
Total Organic Carbon (TOC) Standard Cal 1	Agilent	IQC-106-5	1000 mg/L	0006588597-51848	3/31/2023	20 uL	40 mL	DI Water	0.5 ppm
Total Organic Carbon (TOC) Standard Cal 2	Agilent	IQC-106-5	1000 mg/L	0006588597-51848	3/31/2023	80 uL	40 mL	DI Water	2 ppm
Total Organic Carbon (TOC) Standard Cal 3	Agilent	IQC-106-5	1000 mg/L	0006588597-51848	3/31/2023	200 uL	40 mL	DI Water	5 ppm
Total Organic Carbon (TOC) Standard Cal 4	Agilent	IQC-106-5	1000 mg/L	0006588597-51848	3/31/2023	400 uL	40 mL	DI Water	10 ppm
Total Organic Carbon (TOC) Standard Cal 5	Agilent	IQC-106-5	1000 mg/L	0006588597-51848	3/31/2023	800 uL	40 mL	DI Water	20 ppm

Name of Final Standard ICV (TOC) — **Prep'd By (Initials)** EA

Prep Date 11/27/2021

Exp Date 11/27/2022

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from contianer Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
1000 PPM ICV TOC Intermediate	APPL Inc.	IQC-106-5	1000 mg/L	0006465171-49409	6/30/2021	400 uL	40mL	DI Water	10 ppm

ICV recertified against the non-expired calibration

Name of Final Standard CCV (TOC) — **Prep'd By (Initials)** EA

Prep Date See Data

Exp Date 1 year

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from contianer Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
Total Organic Carbon (TOC) Standard	Agilent	IQC-1 06-5	1000 mg/L	0006588597-51848	3/31/2023	200 uL	40 mL	DI Water	5 ppm

Name of Final Standard TOC_LCS/LCSD — **Prep'd By (Initials)** EA

Prep Date See Data

Exp Date 1 year

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from contianer Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
Total Organic Carbon (TOC) Standard	Agilent	IQC-106-5	1000 mg/L	0006588597-51848	3/31/2023	200 uL	40 mL	DI Water	5 ppm

Name of Final Standard TOC_MS/MSD — **Prep'd By (Initials)** EA

Prep Date See Data

Exp Date 1 year

Initial Standard Information						Final Standard Information			
Name of Initial Standard (from contianer Label)	Supplier	Supplier P/N# (or APPL Mix Name)	Conc.(range)	Lot # with QA # (or reference to APPL prep date)	Exp Date	Aliquot from Stock	Final Volume	Final Solvent + Lot# (or APPL Prep Date)	Final Standard Conc (range)
Total Organic Carbon (TOC) Standard	Agilent	IQC-106-5	1000 mg/L	0006588597-51848	3/31/2023	200 uL	40 mL	sample	5 ppm