CRETE Consulting Incorporated
16300 Christensen Road, Suite 214
Tukwila, WA 98188

October 18, 2024

Tena Seeds
Toxics Cleanup Program
Department of Ecology
Northwest Regional Office
P.O. Box 330316
Shoreline, Washington 98133

Re: Maralco Site Agreed Order No. DE 22343
Progress Report No. 3: Reporting Period July to September 2024 – Revision 1

Dear Tena:

This progress report summarizes the activities performed from July to September 2024 in fulfillment of Agreed Order DE 22343 for the Maralco Site in Kent, Washington. This progress report provides a summary of the work performed, deviations from the scope of work, laboratory analyses, and work anticipated during the following reporting period. Progress Reports will be submitted quarterly, consistent with the requirements of the Agreed Order.

1. Activities Conducted During Reporting Period

The following activities were conducted during the reporting period:

- Decommissioned monitoring wells MW3A, 4A, and 6 on July 22nd following Ecology approval on July 18th
- Surface soil samples were collected on July 25th in the vicinity of empty drums near the former residence that were uncovered during clearing of vegetation
- Surface soil and sludge samples were collected on July 29th from beneath former concrete holding ponds.
- Received additional Ecology comments on the draft Phase 2 Interim Action Work Plan (IAWP) on August 15th.
- Submitted revised draft Phase 2 IAWP to Ecology on August 30th.
- Received Ecology approval to start importing stockpiled soil from Issaquah on August 30th.
- Submitted public review draft Phase 2 IAWP on September 5th.
- Initial soil confirmation samples were collected on September 6th where a stormwater bypass line was to be installed. Bypass line installation had not commenced prior to the end of the quarter (September 30).
- Coordinated with Ecology regarding statistical compliance with PCULs based on natural background concentrations.
- Started updating the Supplemental RIWP.

- SEPA modification and MMDNS to add off-property ROW ditch Interim Action removal activities finalized by City of Kent on September 27th.
- Ecology issued a letter on September 24, 2024 allowing the Phase 2 IAWP work to proceed as long as specific conditions were followed.
- Began implementing the Phase 2 interim action on September 30th.
- Sampled soil at possible soil import borrow site near Pacific Raceways on September 30th.

2. Deviations from Scope of Work, Schedule, or Deliverables

Ecology allowed the Phase 2 IA work to commence prior to completing public comment and finalization of the IAWP.

3. Laboratory Analyses

The following laboratory analyses activities were conducted during the reporting period:

- Clearing of vegetation near the former residence uncovered stored empty drums. Surface soil samples (DA-1 through DA-5) were collected on July 25th and identified contaminated soil.
- Demolition of structures uncovered soil impacts beneath the former holding ponds. Soil and washed oxide sludge from this area was sampled on July 29th and confirmed impacts were present.
- The first phase of the Bellevue 600 stockpile soil data were provided to Ecology on August 27th as part of the import soil approval process.
- Initial soil confirmation samples were collected on September 6th at confirmation sample locations CS-A01 and CS-A02 where a stormwater bypass line was to be installed. The stormwater line work ultimately did not occur prior to the interim action.

A sample location figure, a data summary table, and the analytical data reports for the samples collected from the site are attached.

4. Activities and Planned Deliverables Anticipated for Next Reporting Period

- Complete the on-property portions of Phase 2 Interim Action by mid-October.
- Submit the revised Supplemental RIWP to Ecology by mid-October.
- Public review of the draft Phase 2 IAWP will occur from October 10th to November 8th.
- Receive Ecology approval of the Final Supplemental RI Work Plan by about Thanksgiving.
- Coordinate and start performing Supplemental RI field activities in December.

Please contact me if you have questions about any of the information contained in this Progress Report.

Sincerely,
CRETE CONSULTING INCORPORATED, PC

Grant Hainsworth, P.E.
Principal, Senior Project Manager

cc: Kyle Siekawitch, 7730 202nd Street, LLC

Area 5 (3,410sf)

Any soil/sediment material within the culvert will be removed as part of Area 3 activities, if present.

Drum Area (samples DA-1 through DA-5)

S 202nd St

Any soil/sediment material within the culvert will be removed as part of Area 4 activities, if present.

Area 4 (2,725sf) Stormwater Pond

Area 2a (1,030sf) Surface Soil Contamination

Area 2b (6,550sf) Surface Soil Contamination

Area 3b (530sf)

Area2A-2

Area2A-1

Area2B-2

Area2B-1

Area 1 (26,585sf)

HP-GS-1

Former Concrete Holding Ponds

HP-GS-2

HP-GS-3 (washed oxide sludge)

Area 3a (6,955sf)

CS-A01

CS-A02

IAWP Phase 2 Confirmation Grid Cells will be designated in the field prior to beginning excavation activities.

80th Ave S

BNSF RR

HOUSE

EXISTING BUILDING

LEGEND

- IAWP Phase 2 Areas of Concern
- Extent of Soil Removal IAWP Phase 2
- IAWP Phase 2 Confirmation Grid Cell
- Approximate Extent of 2023 Phase 1 Interim Action Footprint (Former Black Dross Pile)
- Christopher Ditch
- Former Ditch Alignment (Prior to 1991)
- Existing Property Ditch Alignment (Unnamed Ditch)
- Former UST
- Former Excavation Location
- Property Boundary
- Parcel Boundary
- Proposed confirmation sampling location will be designated in the field prior to beginning excavation.

CRETE CONSULTING, INC.

0 80 160

SCALE IN FEET

Maralco Site
7730 South 202nd Street
Kent, Washington
8/30/2024

Figure 17
Confirmation Soil Sample Locations

File: Maralco Site_IAWP 2024.dwg Layout: 17 Conf

Table X - Soil Data Detected Compounds Summary
Maralco Site - Kent, WA

Sample ID and Sample Depth (ft bgs)	Sample Depth (ft bgs)	Date	Aluminum	Iron	Antimony	Arsenic	Cadmium	Chromium	Cobalt	Copper	Lead	Manganese	Nickel	Selenium	Silver	Zinc	Mercury	TPH-DRO	TPH-ORO	Chloride	Fluoride	Nitrate	Ammonia Nitrogen	Benzene	Toluene	Ethylbenzene	Xylenes, Total	Benzo(A)Anthracene*
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Area 2a																												
AREA2A-1	0 - 0.5	7/29/24	**6,870**	**9,180**	**2.2**	**6.1**	**0.52**	**6.6**	**3.4**	**16**	**25**	**160**	**8.5**	**0.26**	0.2 U	**54**	**0.073**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AREA2A-2	0 - 0.5	7/29/24	**8,980**	**12,400**	**0.53**	**6.4**	**0.39**	**8.8**	**3.7**	**19**	**28**	**220**	**7.7**	0.2 U	0.2 U	**50**	**0.082**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Area 2b																												
AREA2B-1	0 - 0.5	7/25/24	**11,400**	**9,540**	**0.26**	**3.2**	0.2 U	**7.1**	**3.5**	**15**	**6.2**	**130**	**5.6**	0.2 UJ	0.2 U	**28**	**0.029**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AREA2B-2	0 - 0.5	7/25/24	**12,400**	**10,400**	**0.42**	**4.5**	0.2 U	**9.2**	**3.6**	**260**	**11**	**160**	**6.0**	0.2 UJ	0.2 U	**120**	**0.18**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Drum Area																												
DA-1	0 - 0.5	7/25/24	**9,650**	**10,600**	**0.32**	**4.4**	**0.33**	**8.9**	**4.3**	**15**	**34**	**170**	**7.4**	0.2 UJ	0.2 U	**40**	**0.063**	50 U	250 U	NA	NA	NA	NA	0.02 U	0.02 U	0.02 U	0.06 U	0.005 U
DA-2	0 - 0.5	7/25/24	**11,700**	**14,100**	**0.81**	**13**	**0.85**	**9.4**	**4.2**	**23**	**49**	**230**	**8.3**	0.2 UJ	0.2 U	**78**	**0.10**	50 U	250 U	NA	NA	NA	NA	0.02 U	0.02 U	0.02 U	0.06 U	**0.0057**
DA-3	0 - 0.5	7/25/24	**9,940**	**11,800**	**0.77**	**12**	**0.54**	**8.2**	**3.9**	**18**	**37**	**200**	**7.6**	0.2 UJ	0.2 U	**65**	**0.10**	50 U	250 U	NA	NA	NA	NA	0.02 U	0.02 U	0.02 U	0.06 U	**0.0057**
DA-4	0 - 0.5	7/25/24	**10,400**	**12,100**	**0.40**	**5.1**	**0.52**	**8.4**	**4.0**	**22**	**39**	**200**	**6.9**	0.2 UJ	0.2 U	**59**	**0.064**	50 U	250 U	NA	NA	NA	NA	0.02 U	0.02 U	0.02 U	0.06 U	0.005 U
DA-5	0 - 0.5	7/25/24	**10,400**	**24,800**	**0.40**	**5.0**	**0.68**	**7.7**	**4.5**	**23**	**21**	**190**	**8.4**	0.2 UJ	0.2 U	**210**	**0.11**	50 U	250 U	NA	NA	NA	NA	0.02 U	0.02 U	0.02 U	0.06 U	**0.0059**
Holding Pond																												
HP-GS-01	0 - 0.5	7/29/24	**27,200**	**9,380**	**7.2**	**11**	**0.84**	**25**	**4.0**	**210**	**23**	**200**	**14**	0.2 U	0.2 U	**180**	**0.078**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
HP-GS-02	0 - 0.5	7/29/24	**94,000**	**3,870**	**2.8**	**5.7**	**0.26**	**15**	**4.5**	**58**	**10**	**150**	**14**	**0.23**	0.2 U	**55**	**0.053**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
HP-GS-03 (sludge)	0 - 0.5	7/29/24	**20,100**	**15,700**	**13**	**2.5**	**4.1**	**110**	**1.9**	**1,300**	**120**	**840**	**42**	0.6 Ujk	**0.57**	**1,000**	**0.20**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Confirmation Samples - Area 1																												
CS-A01-0.5	0.5	9/6/24	**7,240**	**7,910**	0.5 U	**1.9**	0.2 U	**7.3**	**3.2**	**18**	**3.2**	0.4 U	**5.3**	0.2 U	0.2 U	**18**	0.07 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CS-A01-1	1	9/6/24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CS-A02-1	1	9/6/24	**16,900**	**14,500**	0.5 U	**6.0**	**0.25**	**14**	**6.7**	**32**	**5.5**	0.4 U	**13**	0.2 U	0.2 U	**52**	**0.076**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CS-A02-2	2	9/6/24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

NOTES:
Bold - analyte detected
All results ae in mg/kg - milligrams per kilogram
U - analyte not detected above the laboratory reporting limit
J - estimated value
ft bgs - feet below ground surface
NA - not analyzed

Table X - Soil Data Detected Compounds Summary
Maralco Site - Kent, WA

Sample ID and Sample Depth (ft bgs)	Sample Depth (ft bgs)	Date	Benzo(A)Pyrene* mg/kg	Benzo(B)Fluoranthene* mg/kg	Benzo(K)Fluoranthene* mg/kg	Chrysene* mg/kg	Dibenz(A,H)Anthracene* mg/kg	Indeno(1,2,3-Cd)Pyrene mg/kg	Total cPAH mg/kg	Benzo(G,H,I)Perylene mg/kg	Anthracene mg/kg	Acenaphthene mg/kg	Acenaphthylene mg/kg	Fluoranthene mg/kg	Fluorene mg/kg	Naphthalene mg/kg	Phenanthrene mg/kg	Pyrene mg/kg	1-Methylnaphthalene mg/kg	2-Methylnaphthalene mg/kg
Area 2a																				
AREA2A-1	0 - 0.5	7/29/24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AREA2A-2	0 - 0.5	7/29/24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Area 2b																				
AREA2B-1	0 - 0.5	7/25/24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AREA2B-2	0 - 0.5	7/25/24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Drum Area																				
DA-1	0 - 0.5	7/25/24	**0.0067**	**0.011**	0.005 U	**0.0095**	0.005 U	**0.0063**	**0.0335**	**0.0068**	0.005 U	0.005 U	0.005 U	**0.014**	0.005 U	0.005 U	**0.0091**	**0.011**	0.005 U	0.005 U
DA-2	0 - 0.5	7/25/24	**0.0089**	**0.015**	0.005 U	**0.014**	0.005 U	**0.0097**	**0.0533**	**0.011**	0.005 U	0.005 U	0.005 U	**0.018**	0.005 U	0.005 U	**0.01**	**0.015**	0.005 U	**0.0063**
DA-3	0 - 0.5	7/25/24	**0.0076**	**0.016**	0.005 U	**0.016**	0.005 U	**0.01**	**0.0553**	**0.011**	0.005 U	0.005 U	0.005 U	**0.018**	0.005 U	**0.011**	**0.011**	**0.015**	**0.0075**	**0.011**
DA-4	0 - 0.5	7/25/24	**0.0056**	**0.01**	0.005 U	**0.012**	0.005 U	0.005 U	**0.0276**	**0.0077**	0.005 U	0.005 U	0.005 U	**0.016**	0.005 U	0.0071	**0.0094**	**0.012**	0.005 U	**0.006**
DA-5	0 - 0.5	7/25/24	**0.01**	**0.015**	0.005 U	**0.016**	0.005 U	**0.011**	**0.0579**	**0.011**	0.005 U	0.005 U	0.005 U	**0.021**	0.005 U	0.005 U	**0.011**	**0.019**	0.005 U	0.005 U
Holding Pond																				
HP-GS-01	0 - 0.5	7/29/24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
HP-GS-02	0 - 0.5	7/29/24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
HP-GS-03 (sludge)	0 - 0.5	7/29/24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Confirmation Samples - Area 1																				
CS-A01-0.5	0.5	9/6/24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CS-A01-1	1	9/6/24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CS-A02-1	1	9/6/24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CS-A02-2	2	9/6/24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

NOTES:
Bold - analyte detected
All results ae in mg/kg - milligrams per kilogram
U - analyte not detected above the laboratory reporting limit
J - estimated value
ft bgs - feet below ground surface
NA - not analyzed

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Ave South
Seattle, WA 98108-2419
(206) 285-8282
office@friedmanandbruya.com
www.friedmanandbruya.com

September 5, 2024

Rusty Jones, Project Manager
Crete Consulting
16300 Christensen Road, Suite 214
Tukwila, WA 98188

Dear Mr Jones:

Included is the amended report from the testing of material submitted on July 26, 2024 from the Maralco, F&BI 407385 project. Nickel has been added to the report.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Grant Hainsworth, Jamie Stevens
CTC0812R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Ave South
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August 12, 2024

Rusty Jones, Project Manager
Crete Consulting
16300 Christensen Road, Suite 214
Tukwila, WA 98188

Dear Mr Jones:

Included are the results from the testing of material submitted on July 26, 2024 from the Maralco, F&BI 407385 project. There are 8 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Grant Hainsworth, Jamie Stevens
CTC0812R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on July 26, 2024 by Friedman & Bruya, Inc. from the Crete Consulting Maralco, F&BI 407385 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Crete Consulting
407385 -01	Area2B-1
407385 -02	Area2B-2

The samples were sent to Alliance Technical Group for aluminum and iron analyses. The report is enclosed.

The 1631E calibration standard exceeded the acceptance criteria for the method blank. Mercury was not detected, therefore this did not represent an out of control condition, and the results are not considered estimates.

The 1631E matrix spike and matrix spike duplicate exceeded the acceptance criteria. The laboratory control sample passed the acceptance criteria, therefore the results were due to matrix effect.

All other quality control requirements were acceptable.

Analysis For Total Metals By EPA Method 6020B

Client ID:	Area2B-1	Client:	Crete Consulting
Date Received:	07/26/24	Project:	Maralco, F&BI 407385
Date Extracted:	07/29/24	Lab ID:	407385-01
Date Analyzed:	07/31/24	Data File:	407385-01.145
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Antimony	0.26
Arsenic	3.2
Cadmium	<0.2
Chromium	7.1
Cobalt	3.5
Copper	15
Lead	6.2
Manganese	130
Mercury	<0.2
Nickel	5.6
Selenium	<0.2 j
Silver	<0.2
Zinc	28

Analysis For Total Metals By EPA Method 6020B

Client ID:	Area2B-2	Client:	Crete Consulting
Date Received:	07/26/24	Project:	Maralco, F&BI 407385
Date Extracted:	07/29/24	Lab ID:	407385-02
Date Analyzed:	07/31/24	Data File:	407385-02.147
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Antimony	0.42
Arsenic	4.5
Cadmium	<0.2
Chromium	9.2
Cobalt	3.6
Copper	260
Lead	11
Nickel	6.0
Manganese	160
Mercury	<0.2
Selenium	<0.2 j
Silver	<0.2
Zinc	120

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Crete Consulting
Date Received:	Not Applicable	Project:	Maralco, F&BI 407385
Date Extracted:	07/29/24	Lab ID:	I4-603 mb
Date Analyzed:	07/31/24	Data File:	I4-603 mb.134
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Antimony	<0.2
Arsenic	<0.2
Cadmium	<0.2
Chromium	<0.4
Cobalt	<0.2
Copper	<0.54
Lead	<0.2
Manganese	<0.44
Mercury	<0.2
Nickel	<1
Selenium	<0.2 j
Silver	<0.2
Zinc	<3.4

Date of Report: 08/12/24
Date Received: 07/26/24
Project: Maralco, F&BI 407385
Date Extracted: 07/29/24
Date Analyzed: 08/06/24, 08/07/24

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR TRACE TOTAL MERCURY
USING EPA METHOD 1631E

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Total Mercury
Area2B-1 407385-01	0.029
Area2B-2 407385-02	0.18
Method Blank i4-603 mb	<0.02 k j

Date of Report: 08/12/24
Date Received: 07/26/24
Project: Maralco, F&BI 407385

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 407387-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Antimony	mg/kg (ppm)	20	1.46	100	100	75-125	0
Arsenic	mg/kg (ppm)	10	2.83	99 b	101 b	75-125	2 b
Cadmium	mg/kg (ppm)	10	<1	99	98	75-125	1
Chromium	mg/kg (ppm)	50	13.6	86 b	83 b	75-125	4 b
Cobalt	mg/kg (ppm)	20	5.49	81 b	85 b	75-125	5 b
Copper	mg/kg (ppm)	50	26.6	88 b	76 b	75-125	15 b
Lead	mg/kg (ppm)	50	48.1	112 b	140 b	75-125	22 b
Manganese	mg/kg (ppm	20	334	0 b	0 b	75-125	nm
Mercury	mg/kg (ppm	5	<1	101	99	75-125	2
Nickel	mg/kg (ppm)	25	24.1	82 b	82 b	75-125	0 b
Selenium	mg/kg (ppm)	5	<1	92	92	75-125	0
Silver	mg/kg (ppm)	10	<1	98	96	75-125	2
Zinc	mg/kg (ppm)	50	51.8	88 b	102 b	75-125	15 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Antimony	mg/kg (ppm)	20	107	80-120
Arsenic	mg/kg (ppm)	10	99	80-120
Cadmium	mg/kg (ppm)	10	102	80-120
Chromium	mg/kg (ppm)	50	104	80-120
Cobalt	mg/kg (ppm)	20	106	80-120
Copper	mg/kg (ppm)	50	104	80-120
Lead	mg/kg (ppm)	50	102	80-120
Manganese	mg/kg (ppm)	20	104	80-120
Mercury	mg/kg (ppm)	5	104	80-120
Nickel	mg/kg (ppm)	25	106	80-120
Selenium	mg/kg (ppm)	5	101	80-120
Silver	mg/kg (ppm)	10	101	80-120
Zinc	mg/kg (ppm)	50	103	80-120

Date of Report: 08/12/24
Date Received: 07/26/24
Project: Maralco, F&BI 407385

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TRACE TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 407387-01 x10 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Mercury	mg/kg (ppm)	5	0.37	125	151 vo	71-125	19

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Mercury	mg/kg (ppm)	5	114	68-143

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria, biased low; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the standard reporting limit. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

k – The calibration results for the analyte were outside of acceptance criteria, biased high, and the analyte was not detected in the sample.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

407385

SAMPLE CHAIN OF CUSTODY

07/26/24 Page # 1 of 1 VSA1 / M1

Report To Jones, Hainsworth, Stevens
Company CRETE Consulting, Inc.
Address
City, State, ZIP
Phone 832.330.1359 Email

SAMPLERS (signature): Rusty Jones R. Jones
PROJECT NAME: Maralco
PO #: Maralco
REMARKS: Project Metals List: Aluminum, Arsenic, Cadmium, Hg, Chromium, Copper, Iron, Lead, Selenium, Silver, Zn Project specific RLs? - Yes / No
INVOICE TO: CRETE

TURNAROUND TIME
X Standard turnaround
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Archive samples
☐ Other
Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	METALS (Project List)				Notes
AREA 2B-1	01 A-E	7.25.2024	1210	SOIL	5								X				Al, As, Cd, Cr, Cu, Fe, Pb, Hg, Se, Zn, Ag
AREA 2B-2	02 A-E	↓	1215	SOIL	5								X				+Sb per RJ 7/26/24 ME
																	+Co and Mn per GH 7/26/24.
																	+Ni per RJ ME 08/22/24
																	Samples received at 1 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: R. Jones	Rusty Jones	CRETE	7.26.24	0836
Received by:	Nhan Phan	FEBI	7/26/24	0836
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
Ph. (206) 285-8282

SAMPLE CONDITION UPON RECEIPT CHECKLIST

PROJECT # 407385 CLIENT Crete INITIALS/DATE: NA 7/26/24

If custody seals are present on cooler, are they intact? ☑ NA ☐ YES ☐ NO

Cooler/Sample temperature 1° °C
Thermometer ID: Fluke 96312917

Were samples received on ice/cold packs? ☑ YES ☐ NO

How did samples arrive?
☑ Over the Counter ☐ Picked up by F&BI ☐ FedEx/UPS/GSO

Is there a Chain-of-Custody* (COC)? ☑ YES ☐ NO Initials/Date: NA 7/26
*or other representative documents, letters, and/or shipping memos

Number of days samples have been sitting prior to receipt at laboratory 1 days

Are the samples clearly identified? (explain "no" answer below) ☑ YES ☐ NO

Were all sample containers received intact (i.e. not broken, leaking etc.)? (explain "no" answer below) ☑ YES ☐ NO

Were appropriate sample containers used? ☑ YES ☐ NO ☐ Unknown

If custody seals are present on samples, are they intact? ☑ NA ☐ YES ☐ NO

Are samples requiring no headspace, headspace free? ☑ NA ☐ YES ☐ NO

Is the following information provided on the COC, and does it match the sample label? (explain "no" answer below)

Sample ID's	☑ Yes ☐ No	☐ Not on COC/label
Date Sampled	☑ Yes ☐ No	☐ Not on COC/label
Time Sampled	☑ Yes ☐ No	☐ Not on COC/label
# of Containers	☑ Yes ☐ No	
Relinquished	☑ Yes ☐ No	
Requested analysis	☑ Yes ☐ On Hold	

Other comments (use a separate page if needed)

Air Samples: Were any additional canisters/tubes received? ☑ NA ☐ YES ☐ NO

Number of unused TO15 canisters _____ Number of unused TO17 tubes _____

3600 Fremont Ave N
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Friedman & Bruya
Michael Erdahl
5500 4th Ave S
Seattle, WA 98108

RE: 407385,
Work Order Number: 2407450

August 05, 2024

Attention Michael Erdahl:

Fremont Analytical, Inc, an Alliance Technical Group company, received 2 sample(s) on 7/26/2024 for the analyses presented in the following report.

Sample Moisture (Percent Moisture)
Total Metals by EPA 6020B

All analyses were performed according to our accredited Quality Assurance program. Please contact the laboratory if you should have any questions about the results.

Please note, while the appearance of our logo and branding will update, our commitment to accuracy, speed, and customer service remain values celebrated and shared by Alliance Technical Group. Thank you for the opportunity to serve you.

Sincerely,

Brianna Barnes
Project Manager

DoD-ELAP Accreditation #79636 by PJLA, ISO/IEC 17025:2017 and QSM 5.4 for Environmental Testing
ORELAP Certification: WA 100009 (NELAP Recognized) for Environmental Testing
Washington State Department of Ecology Accredited for Environmental Testing, Lab ID C910

Original

Date: *08/05/2024*

CLIENT: Friedman & Bruya
Project: 407385
Work Order: 2407450

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2407450-001	AREA2B-1	07/25/2024 12:10 PM	07/26/2024 2:05 PM
2407450-002	AREA2B-2	07/25/2024 12:15 PM	07/26/2024 2:05 PM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Original

Case Narrative

WO#: **2407450**

Date: **8/5/2024**

CLIENT: Friedman & Bruya
Project: 407385

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

CLIENT: Friedman & Bruya
Project: 407385

Lab ID: 2407450-001 **Collection Date:** 7/25/2024 12:10:00 PM
Client Sample ID: **AREA2B-1** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA 6020B				Batch ID: 44677		Analyst: ME
Aluminum	11,400	40.2		mg/Kg-dry	1	8/2/2024 1:37:00 PM
Iron	9,540	6.53		mg/Kg-dry	1	8/2/2024 1:37:00 PM
Sample Moisture (Percent Moisture)				Batch ID: R93300		Analyst: DI
Percent Moisture	2.00	0.500		wt%	1	7/29/2024 9:18:32 AM

Lab ID: 2407450-002 **Collection Date:** 7/25/2024 12:15:00 PM
Client Sample ID: **AREA2B-2** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA 6020B				Batch ID: 44677		Analyst: ME
Aluminum	12,400	41.0		mg/Kg-dry	1	8/2/2024 1:40:00 PM
Iron	10,400	6.67		mg/Kg-dry	1	8/2/2024 1:40:00 PM
Sample Moisture (Percent Moisture)				Batch ID: R93300		Analyst: DI
Percent Moisture	2.54	0.500		wt%	1	7/29/2024 9:18:32 AM

Work Order: 2407450
CLIENT: Friedman & Bruya
Project: 407385

QC SUMMARY REPORT

Total Metals by EPA 6020B

Sample ID: **MB-44677**	SampType: **MBLK**	Units: **mg/Kg**	Prep Date: **7/30/2024**	RunNo: **93402**
Client ID: **MBLKS**	Batch ID: **44677**		Analysis Date: **8/1/2024**	SeqNo: **1949501**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	40.0									
Iron	ND	6.50									

Sample ID: **LCS-44677**	SampType: **LCS**	Units: **mg/Kg**	Prep Date: **7/30/2024**	RunNo: **93402**
Client ID: **LCSS**	Batch ID: **44677**		Analysis Date: **8/1/2024**	SeqNo: **1949502**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	380	40.0	400.0	0	95.1	80	120				
Iron	399	6.50	400.0	0	99.8	80	120				

Sample ID: **LCSD-44677**	SampType: **LCSD**	Units: **mg/Kg**	Prep Date: **7/30/2024**	RunNo: **93402**
Client ID: **LCSS02**	Batch ID: **44677**		Analysis Date: **8/1/2024**	SeqNo: **1949503**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	356	40.0	400.0	0	89.0	80	120	380.4	6.68	20	
Iron	379	6.50	400.0	0	94.7	80	120	399.3	5.25	20	

Sample ID: **2407423-020ADUP**	SampType: **DUP**	Units: **mg/Kg-dry**	Prep Date: **7/30/2024**	RunNo: **93402**
Client ID: **BATCH**	Batch ID: **44677**		Analysis Date: **8/1/2024**	SeqNo: **1949505**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	11,100	43.5						10,800	2.55	20	E
Iron	12,900	7.07						15,660	19.4	20	E

Sample ID: **2407423-020AMS**	SampType: **MS**	Units: **mg/Kg-dry**	Prep Date: **7/30/2024**	RunNo: **93402**
Client ID: **BATCH**	Batch ID: **44677**		Analysis Date: **8/1/2024**	SeqNo: **1949506**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	11,300	44.9	449.2	10,800	117	75	125				E
Iron	14,700	7.30	449.2	15,660	-221	75	125				ES

Work Order: 2407450
CLIENT: Friedman & Bruya
Project: 407385

QC SUMMARY REPORT

Total Metals by EPA 6020B

Sample ID: **2407423-020AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **7/30/2024** RunNo: **93402**
Client ID: **BATCH** Batch ID: **44677** Analysis Date: **8/1/2024** SeqNo: **1949506**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

NOTES:
S - Spiked amount was low relative to sample concentration. Outlying spike recoveries may be expected.

Sample ID: **2407423-020AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **7/30/2024** RunNo: **93402**
Client ID: **BATCH** Batch ID: **44677** Analysis Date: **8/1/2024** SeqNo: **1949507**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	10,100	44.6	445.7	10,800	-166	75	125	11,330	11.8	20	ES
Iron	11,700	7.24	445.7	15,660	-897	75	125	14,670	22.8	20	ERS

NOTES:
S,R - Spiked amount was low relative to sample concentration. Outlying spike recovery and RPDs may be expected.

Sample Log-In Check List

Client Name:	FB	Work Order Number:	2407450
Logged by:	Morgan Wilson	Date Received:	7/26/2024 2:05:00 PM

Chain of Custody

1.	Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2.	How was the sample delivered?	Client		

Log In

3.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes ☐	No ☐	Not Present ☑
4.	Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5.	Were all items received at a temperature of >2°C to 6°C *	Yes ☑	No ☐	NA ☐
6.	Sample(s) in proper container(s)?	Yes ☑	No ☐	
7.	Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8.	Are samples properly preserved?	Yes ☑	No ☐	
9.	Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10.	Is there headspace in the VOA vials?	Yes ☐	No ☐	NA ☑
11.	Did all samples containers arrive in good condition(unbroken)?	Yes ☑	No ☐	
12.	Does paperwork match bottle labels?	Yes ☑	No ☐	
13.	Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14.	Is it clear what analyses were requested?	Yes ☑	No ☐	
15.	Were all hold times (except field parameters, pH e.g.) able to be met?	Yes ☑	No ☐	

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified:		Date:	
By Whom:		Via:	☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:			
Client Instructions:			

17. Additional remarks:

Item Information

Item #	Temp ºC
Sample	5.9

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2407450

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 5500 4th Ave S

City, State, ZIP Seattle, WA 98108

Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER
Alliance Technical Group

PROJECT NAME/NO.	PO #
407385	E-308

REMARKS
EIM

TURNAROUND TIME
☒ Standard TAT
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED: Al and Fe										Notes
AREA2B-1		7/25/2024	1210	soil	1	x										
AREA2B-2		7/25/2024	1215	soil	1	x										

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Michael Erdahl	Friedman & Bruya	7/26/24	0933
Received by:		Nathan Hafer	ATG	7/26/24	1705
Relinquished by:					
Received by:					

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Ave South
Seattle, WA 98108-2419
(206) 285-8282
office@friedmanandbruya.com
www.friedmanandbruya.com

Septmber 5, 2024

Rusty Jones, Project Manager
Crete Consulting
16300 Christensen Road, Suite 214
Tukwila, WA 98188

Dear Mr Jones:

Included is the amended report from the testing of material submitted on July 29, 2024 from the Maralco, F&BI 407421 project. Nickel has been added to the report.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Grant Hainsworth, Jamie Stevens
CTC0807R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
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Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Ave South
Seattle, WA 98108-2419
(206) 285-8282
office@friedmanandbruya.com
www.friedmanandbruya.com

August 7, 2024

Rusty Jones, Project Manager
Crete Consulting
16300 Christensen Road, Suite 214
Tukwila, WA 98188

Dear Mr Jones:

Included are the results from the testing of material submitted on July 29, 2024 from the Maralco, F&BI 407421 project. There are 11 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Grant Hainsworth, Jamie Stevens
CTC0807R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on July 29, 2024 by Friedman & Bruya, Inc. from the Crete Consulting Maralco, F&BI 407421 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Crete Consulting
407421 -01	Area2A-01
407421 -02	Area2A-02

The samples were sent to Alliance Technical Group for aluminum and iron analyses. The report is enclosed.

All quality control requirements were acceptable.

Analysis For Total Metals By EPA Method 6020B

Client ID:	Area2A-01	Client:	Crete Consulting
Date Received:	07/29/24	Project:	Maralco, F&BI 407421
Date Extracted:	07/30/24	Lab ID:	407421-01
Date Analyzed:	07/30/24	Data File:	407421-01.173
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Antimony	2.2
Arsenic	6.1
Cadmium	0.52
Chromium	6.6
Cobalt	3.4
Copper	16
Lead	25
Manganese	160
Nickel	8.5
Selenium	0.26
Silver	<0.2

Analysis For Total Metals By EPA Method 6020B

Client ID:	Area2A-01	Client:	Crete Consulting
Date Received:	07/29/24	Project:	Maralco, F&BI 407421
Date Extracted:	07/30/24	Lab ID:	407421-01
Date Analyzed:	08/01/24	Data File:	407421-01.160
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Zinc	54

Analysis For Total Metals By EPA Method 6020B

Client ID:	Area2A-02	Client:	Crete Consulting
Date Received:	07/29/24	Project:	Maralco, F&BI 407421
Date Extracted:	07/30/24	Lab ID:	407421-02
Date Analyzed:	07/30/24	Data File:	407421-02.203
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Antimony	0.53
Arsenic	6.4
Cadmium	0.39
Chromium	8.8
Cobalt	3.7
Copper	19
Lead	28
Nickel	7.7
Selenium	<0.2
Silver	<0.2

Analysis For Total Metals By EPA Method 6020B

Client ID:	Area2A-02	Client:	Crete Consulting
Date Received:	07/29/24	Project:	Maralco, F&BI 407421
Date Extracted:	07/30/24	Lab ID:	407421-02
Date Analyzed:	08/01/24	Data File:	407421-02.161
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Zinc	50

Analysis For Total Metals By EPA Method 6020B

Client ID:	Area2A-02	Client:	Crete Consulting
Date Received:	07/29/24	Project:	Maralco, F&BI 407421
Date Extracted:	07/30/24	Lab ID:	407421-02 x5
Date Analyzed:	07/30/24	Data File:	407421-02 x5.202
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Manganese	220

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Crete Consulting
Date Received:	Not Applicable	Project:	Maralco, F&BI 407421
Date Extracted:	07/30/24	Lab ID:	I4-610 mb
Date Analyzed:	07/30/24	Data File:	I4-610 mb.171
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Antimony	<0.5
Arsenic	<0.2
Cadmium	<0.2
Chromium	<0.5
Cobalt	<0.2
Copper	<0.6
Lead	<0.2
Manganese	<0.5
Nickel	<1
Selenium	<0.2
Silver	<0.2
Zinc	<3.4

Date of Report: 08/07/24
Date Received: 07/29/24
Project: Maralco, F&BI 407421
Date Extracted: 07/30/24
Date Analyzed: 07/31/24

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR TOTAL MERCURY
USING EPA METHOD 1631E
Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Total Mercury
Area2A-01 407421-01	0.073
Area2A-02 407421-02	0.082
Method Blank i4-610 mb	<0.01

Date of Report: 08/07/24
Date Received: 07/29/24
Project: Maralco, F&BI 407421

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 407421-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Antimony	mg/kg (ppm)	20	1.99	86	82	75-125	5
Arsenic	mg/kg (ppm)	10	5.58	96 b	87 b	75-125	10 b
Cadmium	mg/kg (ppm)	10	<1	93	93	75-125	0
Chromium	mg/kg (ppm)	50	5.99	86	85	75-125	1
Cobalt	mg/kg (ppm)	20	3.07	78	81	75-125	4
Copper	mg/kg (ppm)	50	15.0	70 b	71 b	75-125	1 b
Lead	mg/kg (ppm)	50	22.4	90 b	93 b	75-125	3 b
Manganese	mg/kg (ppm	20	146	70 b	119 b	75-125	52 b
Nickel	mg/kg (ppm)	25	7.74	74 b	79 b	75-125	7 b
Selenium	mg/kg (ppm)	5	<1	82	77	75-125	6
Silver	mg/kg (ppm)	10	<1	90	89	75-125	1
Zinc	mg/kg (ppm)	50	45.1	69 b	79 b	75-125	14 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Antimony	mg/kg (ppm)	20	96	80-120
Arsenic	mg/kg (ppm)	10	97	80-120
Cadmium	mg/kg (ppm)	10	96	80-120
Chromium	mg/kg (ppm)	50	101	80-120
Cobalt	mg/kg (ppm)	20	99	80-120
Copper	mg/kg (ppm)	50	96	80-120
Lead	mg/kg (ppm)	50	95	80-120
Manganese	mg/kg (ppm)	20	98	80-120
Nickel	mg/kg (ppm)	25	99	80-120
Selenium	mg/kg (ppm)	5	95	80-120
Silver	mg/kg (ppm)	10	99	80-120
Zinc	mg/kg (ppm)	50	94	80-120

Date of Report: 08/07/24
Date Received: 07/29/24
Project: Maralco, F&BI 407421

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 407421-01 x10 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Mercury	mg/kg (ppm)	5	<0.025	115	94	71-125	20

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Mercury	mg/kg (ppm)	5	106	68-143

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria, biased low; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the standard reporting limit. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

k – The calibration results for the analyte were outside of acceptance criteria, biased high, and the analyte was not detected in the sample.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

407421

SAMPLE CHAIN OF CUSTODY

07/29/24

Page # 1 of 1 M2

Report To Jones, Hainsworth, Stevens

Company CRETE Consulting, Inc.

Address

City, State, ZIP

Phone 832.330.1359 Email

SAMPLERS (signature) R. Jones Rusty Jones

PROJECT NAME: Maralco

PO #: Maralco

REMARKS Project Metals list: Sb, Al, As, Cd, Cr, Cu, Fe, Pb, Hg, Se, Zn, Ag, Project specific RLs? - Yes / No

INVOICE TO: CRETE

TURNAROUND TIME
☒ Standard turnaround
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Archive samples
☐ Other
Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Metals				Notes
AREA2A-01	01	7/29/2024	1210	SOILS	1								X				+Mn and Co
AREA2A-02	02	↓	1215	↓	1								X				per GH 7/29/24 ME
																	+Ni per RJ 08/23/24 ME

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: R. Jones	Rusty Jones	CRETE	7/29/2024	1503
Received by: Ann W Bruya	Ann W Bruya	F&B	7/29/24	1503
Relinquished by:				
Received by:		Samples received at 5 °C		

Friedman & Bruya, Inc.
Ph. (206) 285-8282

SAMPLE CONDITION UPON RECEIPT CHECKLIST

PROJECT # 407421 CLIENT Chete INITIALS/ DATE: AMB 7/29

If custody seals are present on cooler, are they intact? ☒ NA ☐ YES ☐ NO

Cooler/Sample temperature 5 °C
Thermometer ID: Fluke 96312917

Were samples received on ice/cold packs? ☒ YES ☐ NO

How did samples arrive?
☒ Over the Counter ☐ Picked up by F&BI ☐ FedEx/UPS/GSO

Is there a Chain-of-Custody* (COC)? ☑ YES ☐ NO Initials/ Date: AMB 7/30
*or other representative documents, letters, and/or shipping memos

Number of days samples have been sitting prior to receipt at laboratory 0 days

Are the samples clearly identified? (explain "no" answer below) ☑ YES ☐ NO

Were all sample containers received intact (i.e. not broken, leaking etc.)? (explain "no" answer below) ☑ YES ☐ NO

Were appropriate sample containers used? ☑ YES ☐ NO ☐ Unknown

If custody seals are present on samples, are they intact? ☐ NA ☐ YES ☐ NO

Are samples requiring no headspace, headspace free? ☐ NA ☐ YES ☐ NO

Is the following information provided on the COC, and does it match the sample label?
(explain "no" answer below)

Sample ID's	☑ Yes ☐ No	☐ Not on COC/label
Date Sampled	☑ Yes ☐ No	☐ Not on COC/label
Time Sampled	☑ Yes ☐ No	☐ Not on COC/label
# of Containers	☑ Yes ☐ No	
Relinquished	☑ Yes ☐ No	
Requested analysis	☐ Yes ☐ On Hold	

Other comments (use a separate page if needed)

Air Samples: Were any additional canisters/tubes received? ☒ NA ☐ YES ☐ NO

Number of unused TO15 canisters _____ Number of unused TO17 tubes _____

3600 Fremont Ave N
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Friedman & Bruya
Michael Erdahl
5500 4th Ave S
Seattle, WA 98108

RE: 407421, E-323mg
Work Order Number: 2407486

August 05, 2024

Attention Michael Erdahl:

Fremont Analytical, Inc, an Alliance Technical Group company, received 2 sample(s) on 7/30/2024 for the analyses presented in the following report.

Sample Moisture (Percent Moisture)
Total Metals by EPA 6020B

All analyses were performed according to our accredited Quality Assurance program. Please contact the laboratory if you should have any questions about the results.

Please note, while the appearance of our logo and branding will update, our commitment to accuracy, speed, and customer service remain values celebrated and shared by Alliance Technical Group. Thank you for the opportunity to serve you.

Sincerely,

Brianna Barnes
Project Manager

DoD-ELAP Accreditation #79636 by PJLA, ISO/IEC 17025:2017 and QSM 5.4 for Environmental Testing
ORELAP Certification: WA 100009 (NELAP Recognized) for Environmental Testing
Washington State Department of Ecology Accredited for Environmental Testing, Lab ID C910

Original

Date: *08/06/2024*

CLIENT: Friedman & Bruya
Project: 407421
Work Order: 2407486

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2407486-001	AREA2A-01	07/29/2024 12:10 PM	07/30/2024 1:07 PM
2407486-002	AREA2A-02	07/29/2024 12:15 PM	07/30/2024 1:07 PM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Original

Case Narrative

WO#: **2407486**

Date: **8/5/2024**

CLIENT: Friedman & Bruya
Project: 407421

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

CLIENT: Friedman & Bruya
Project: 407421

Lab ID: 2407486-001 **Collection Date:** 7/29/2024 12:10:00 PM
Client Sample ID: **AREA2A-01** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA 6020B				Batch ID: 44704		Analyst: ME
Aluminum	6,870	46.5		mg/Kg-dry	1	8/2/2024 1:28:00 PM
Iron	9,180	7.56		mg/Kg-dry	1	8/2/2024 1:28:00 PM
Sample Moisture (Percent Moisture)				Batch ID: R93338		Analyst: GHG
Percent Moisture	9.64	0.500		wt%	1	7/31/2024 9:28:46 AM

Lab ID: 2407486-002 **Collection Date:** 7/29/2024 12:15:00 PM
Client Sample ID: **AREA2A-02** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA 6020B				Batch ID: 44704		Analyst: ME
Aluminum	8,980	44.8		mg/Kg-dry	1	8/2/2024 1:30:00 PM
Iron	12,400	7.28		mg/Kg-dry	1	8/2/2024 1:30:00 PM
Sample Moisture (Percent Moisture)				Batch ID: R93338		Analyst: GHG
Percent Moisture	7.71	0.500		wt%	1	7/31/2024 9:28:46 AM

Work Order: 2407486
CLIENT: Friedman & Bruya
Project: 407421

QC SUMMARY REPORT

Total Metals by EPA 6020B

Sample ID: **MB-44704**	SampType: **MBLK**	Units: **mg/Kg**	Prep Date: **8/1/2024**	RunNo: **93403**
Client ID: **MBLKS**	Batch ID: **44704**		Analysis Date: **8/1/2024**	SeqNo: **1949586**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	40.0									
Iron	ND	6.50									

Sample ID: **LCS-44704**	SampType: **LCS**	Units: **mg/Kg**	Prep Date: **8/1/2024**	RunNo: **93403**
Client ID: **LCSS**	Batch ID: **44704**		Analysis Date: **8/1/2024**	SeqNo: **1949587**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	368	40.0	400.0	0	92.0	80	120				
Iron	398	6.50	400.0	0	99.4	80	120				

Sample ID: **2407486-001AMS**	SampType: **MS**	Units: **mg/Kg-dry**	Prep Date: **8/1/2024**	RunNo: **93403**
Client ID: **AREA2A-01**	Batch ID: **44704**		Analysis Date: **8/1/2024**	SeqNo: **1949589**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	8,760	44.6	446.3	7,059	381	75	125				ES
Iron	9,450	7.25	446.3	9,030	95.2	75	125				E

NOTES:
S - Spiked amount was low relative to sample concentration. Outlying spike recoveries may be expected.

Sample ID: **2407486-001AMSD**	SampType: **MSD**	Units: **mg/Kg-dry**	Prep Date: **8/1/2024**	RunNo: **93403**
Client ID: **AREA2A-01**	Batch ID: **44704**		Analysis Date: **8/1/2024**	SeqNo: **1949590**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	8,490	46.9	468.9	7,059	306	75	125	8,760	3.11	20	ES
Iron	8,970	7.62	468.9	9,030	-13.3	75	125	9,454	5.29	20	ES

NOTES:
S - Spiked amount was low relative to sample concentration. Outlying spike recoveries may be expected.

Work Order: 2407486
CLIENT: Friedman & Bruya
Project: 407421

QC SUMMARY REPORT

Total Metals by EPA 6020B

Sample ID: **2407486-001APDS** SampType: **PDS** Units: **mg/Kg-dry** Prep Date: **8/1/2024** RunNo: **93403**
Client ID: **AREA2A-01** Batch ID: **44704** Analysis Date: **8/1/2024** SeqNo: **1949592**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	7,620	46.5	465	7,060	121	75	125				E

Sample Log-In Check List

Client Name:	FB	Work Order Number:	2407486
Logged by:	Clare Griggs	Date Received:	7/30/2024 1:07:00 PM

Chain of Custody

1.	Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2.	How was the sample delivered?	Courier		

Log In

3.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes ☐	No ☐	Not Present ☑
4.	Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5.	Were all items received at a temperature of >2°C to 6°C *	Yes ☑	No ☐	NA ☐
6.	Sample(s) in proper container(s)?	Yes ☑	No ☐	
7.	Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8.	Are samples properly preserved?	Yes ☑	No ☐	
9.	Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10.	Is there headspace in the VOA vials?	Yes ☐	No ☐	NA ☑
11.	Did all samples containers arrive in good condition(unbroken)?	Yes ☑	No ☐	
12.	Does paperwork match bottle labels?	Yes ☑	No ☐	
13.	Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14.	Is it clear what analyses were requested?	Yes ☑	No ☐	
15.	Were all hold times (except field parameters, pH e.g.) able to be met?	Yes ☑	No ☐	

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified:		Date:	
By Whom:		Via:	☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:			
Client Instructions:			

17. Additional remarks:

Item Information

Item #	Temp ºC
Sample	5.5

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2407486

Page # _____ of _____

Send Report To Michael Erdahl

Company Friedman & Bruya.

Address 5500 4th Ave S

City, State, ZIP Seattle, WA 98108

Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER Alliance Technical Group	
PROJECT NAME/NO. 407421	PO # E-323-y
REMARKS EIM	

TURNAROUND TIME
☒ Standard
RUSH _____
Rush charges authorized by: _____

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED: Metals 6020 (Al, Fe)										Notes
AREA2A-01		7/29/2024	12:10	soil	1	x										
AREA2A-02		7/29/2024	12:15	soil	1	x										

Friedman & Bruya, Inc.
5500 4th Ave S
Seattle, WA 98115
Ph. (206) 285-8282
Fax (206) 283-5044

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Mac Goldman	Friedman and Bruya	7/30	9:00
Received by:		BrianaBallard	ATG	7/30	1:07pm
Relinquished by:					
Received by:					

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Ave South
Seattle, WA 98108-2419
(206) 285-8282
office@friedmanandbruya.com
www.friedmanandbruya.com

September 5, 2024

Rusty Jones, Project Manager
Crete Consulting
16300 Christensen Road, Suite 214
Tukwila, WA 98188

Dear Mr Jones:

Included is the amended report from the testing of material submitted on July 26, 2024 from the Maralco, F&BI 407386 project. Nickel has been added to the report.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Grant Hainsworth, Jamie Stevens
CTC0812R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Ave South
Seattle, WA 98108-2419
(206) 285-8282
office@friedmanandbruya.com
www.friedmanandbruya.com

August 12, 2024

Rusty Jones, Project Manager
Crete Consulting
16300 Christensen Road, Suite 214
Tukwila, WA 98188

Dear Mr Jones:

Included are the results from the testing of material submitted on July 26, 2024 from the Maralco, F&BI 407386 project. There are 23 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Grant Hainsworth, Jamie Stevens
CTC0812R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on July 26, 2024 by Friedman & Bruya, Inc. from the Crete Consulting Maralco, F&BI 407386 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Crete Consulting
407386 -01	DA-1
407386 -02	DA-2
407386 -03	DA-3
407386 -04	DA-4
407386 -05	DA-5

The samples were sent to Alliance Technical Group for aluminum and iron analyses. The report is enclosed.

The 1631E calibration standard exceeded the acceptance criteria for the method blank. Mercury was not detected, therefore this did not represent an out of control condition, and the results are not considered estimates.

The 8270E matrix spike and matrix spike duplicate did not meet the relative percent difference for several compounds. The laboratory control sample passed the acceptance criteria, therefore the results were due to matrix effect.

The 1631E matrix spike and matrix spike duplicate exceeded the acceptance criteria. The laboratory control sample passed the acceptance criteria, therefore the results were due to matrix effect.

All other quality control requirements were acceptable.

Date of Report: 08/12/24
Date Received: 07/26/24
Project: Maralco, F&BI 407386
Date Extracted: 07/30/24
Date Analyzed: 07/30/24

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENES
USING EPA METHOD 8021B**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Surrogate (% Recovery) (Limit 50-150)
DA-1 407386-01	<0.02	<0.02	<0.02	<0.06	107
DA-2 407386-02	<0.02	<0.02	<0.02	<0.06	106
DA-3 407386-03	<0.02	<0.02	<0.02	<0.06	108
DA-4 407386-04	<0.02	<0.02	<0.02	<0.06	109
DA-5 407386-05	<0.02	<0.02	<0.02	<0.06	108
Method Blank 04-1722 MB	<0.02	<0.02	<0.02	<0.06	104

Date of Report: 08/12/24
Date Received: 07/26/24
Project: Maralco, F&BI 407386
Date Extracted: 07/26/24
Date Analyzed: 07/26/24

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 50-150)
DA-1 407386-01	<50	<250	106
DA-2 407386-02	<50	<250	105
DA-3 407386-03	<50	<250	105
DA-4 407386-04	<50	<250	107
DA-5 407386-05	<50	<250	106
Method Blank 04-1719 MB	<50	<250	106

Analysis For Semivolatile Compounds By EPA Method 8270E SIM

Client Sample ID:	DA-1	Client:	Crete Consulting
Date Received:	07/26/24	Project:	Maralco, F&BI 407386
Date Extracted:	07/29/24	Lab ID:	407386-01
Date Analyzed:	07/30/24	Data File:	073030.D
Matrix:	Soil	Instrument:	GCMS14
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	79	50	150
Benz(a)anthracene-d12	93	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.005
2-Methylnaphthalene	<0.005
1-Methylnaphthalene	<0.005
Acenaphthylene	<0.005
Acenaphthene	<0.005
Fluorene	<0.005
Phenanthrene	0.0091
Anthracene	<0.005
Fluoranthene	0.014
Pyrene	0.011
Benz(a)anthracene	<0.005
Chrysene	0.0095
Benzo(b)fluoranthene	0.011
Benzo(k)fluoranthene	<0.005
Benzo(a)pyrene	0.0067
Indeno(1,2,3-cd)pyrene	0.0063
Dibenz(a,h)anthracene	<0.005
Benzo(g,h,i)perylene	0.0068

Analysis For Semivolatile Compounds By EPA Method 8270E SIM

Client Sample ID:	DA-2	Client:	Crete Consulting
Date Received:	07/26/24	Project:	Maralco, F&BI 407386
Date Extracted:	07/29/24	Lab ID:	407386-02
Date Analyzed:	07/30/24	Data File:	073031.D
Matrix:	Soil	Instrument:	GCMS14
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	89	50	150
Benz(a)anthracene-d12	107	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.005
2-Methylnaphthalene	0.0063
1-Methylnaphthalene	<0.005
Acenaphthylene	<0.005
Acenaphthene	<0.005
Fluorene	<0.005
Phenanthrene	0.010
Anthracene	<0.005
Fluoranthene	0.018
Pyrene	0.015
Benz(a)anthracene	0.0057
Chrysene	0.014
Benzo(b)fluoranthene	0.015
Benzo(k)fluoranthene	<0.005
Benzo(a)pyrene	0.0089
Indeno(1,2,3-cd)pyrene	0.0097
Dibenz(a,h)anthracene	<0.005
Benzo(g,h,i)perylene	0.011

Analysis For Semivolatile Compounds By EPA Method 8270E SIM

Client Sample ID:	DA-3	Client:	Crete Consulting
Date Received:	07/26/24	Project:	Maralco, F&BI 407386
Date Extracted:	07/29/24	Lab ID:	407386-03
Date Analyzed:	07/30/24	Data File:	073032.D
Matrix:	Soil	Instrument:	GCMS14
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	90	50	150
Benz(a)anthracene-d12	108	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	0.011
2-Methylnaphthalene	0.011
1-Methylnaphthalene	0.0075
Acenaphthylene	<0.005
Acenaphthene	<0.005
Fluorene	<0.005
Phenanthrene	0.011
Anthracene	<0.005
Fluoranthene	0.018
Pyrene	0.015
Benz(a)anthracene	0.0057
Chrysene	0.016
Benzo(b)fluoranthene	0.016
Benzo(k)fluoranthene	<0.005
Benzo(a)pyrene	0.0076
Indeno(1,2,3-cd)pyrene	0.010
Dibenz(a,h)anthracene	<0.005
Benzo(g,h,i)perylene	0.011

Analysis For Semivolatile Compounds By EPA Method 8270E SIM

Client Sample ID:	DA-4	Client:	Crete Consulting
Date Received:	07/26/24	Project:	Maralco, F&BI 407386
Date Extracted:	07/29/24	Lab ID:	407386-04
Date Analyzed:	07/30/24	Data File:	073033.D
Matrix:	Soil	Instrument:	GCMS14
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	83	50	150
Benz(a)anthracene-d12	99	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	0.0071
2-Methylnaphthalene	0.0060
1-Methylnaphthalene	<0.005
Acenaphthylene	<0.005
Acenaphthene	<0.005
Fluorene	<0.005
Phenanthrene	0.0094
Anthracene	<0.005
Fluoranthene	0.016
Pyrene	0.012
Benz(a)anthracene	<0.005
Chrysene	0.012
Benzo(b)fluoranthene	0.010
Benzo(k)fluoranthene	<0.005
Benzo(a)pyrene	0.0056
Indeno(1,2,3-cd)pyrene	<0.005
Dibenz(a,h)anthracene	<0.005
Benzo(g,h,i)perylene	0.0077

Analysis For Semivolatile Compounds By EPA Method 8270E SIM

Client Sample ID:	DA-5	Client:	Crete Consulting
Date Received:	07/26/24	Project:	Maralco, F&BI 407386
Date Extracted:	07/29/24	Lab ID:	407386-05
Date Analyzed:	07/30/24	Data File:	073034.D
Matrix:	Soil	Instrument:	GCMS14
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	87	50	150
Benz(a)anthracene-d12	102	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.005
2-Methylnaphthalene	<0.005
1-Methylnaphthalene	<0.005
Acenaphthylene	<0.005
Acenaphthene	<0.005
Fluorene	<0.005
Phenanthrene	0.011
Anthracene	<0.005
Fluoranthene	0.021
Pyrene	0.019
Benz(a)anthracene	0.0059
Chrysene	0.016
Benzo(b)fluoranthene	0.015
Benzo(k)fluoranthene	<0.005
Benzo(a)pyrene	0.010
Indeno(1,2,3-cd)pyrene	0.011
Dibenz(a,h)anthracene	<0.005
Benzo(g,h,i)perylene	0.011

Analysis For Semivolatile Compounds By EPA Method 8270E SIM

Client Sample ID:	Method Blank	Client:	Crete Consulting
Date Received:	Not Applicable	Project:	Maralco, F&BI 407386
Date Extracted:	07/29/24	Lab ID:	04-1720 mb
Date Analyzed:	07/29/24	Data File:	072910.D
Matrix:	Soil	Instrument:	GCMS14
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	91	50	150
Benz(a)anthracene-d12	106	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.005
2-Methylnaphthalene	<0.005
1-Methylnaphthalene	<0.005
Acenaphthylene	<0.005
Acenaphthene	<0.005
Fluorene	<0.005
Phenanthrene	<0.005
Anthracene	<0.005
Fluoranthene	<0.005
Pyrene	<0.005
Benz(a)anthracene	<0.005
Chrysene	<0.005
Benzo(b)fluoranthene	<0.005
Benzo(k)fluoranthene	<0.005
Benzo(a)pyrene	<0.005
Indeno(1,2,3-cd)pyrene	<0.005
Dibenz(a,h)anthracene	<0.005
Benzo(g,h,i)perylene	<0.005

Analysis For Total Metals By EPA Method 6020B

Client ID:	DA-1	Client:	Crete Consulting
Date Received:	07/26/24	Project:	Maralco, F&BI 407386
Date Extracted:	07/29/24	Lab ID:	407386-01
Date Analyzed:	07/31/24	Data File:	407386-01.135
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Antimony	0.32
Arsenic	4.4
Cadmium	0.33
Chromium	8.9
Cobalt	4.3
Copper	15
Lead	34
Manganese	170
Mercury	<0.2
Nickel	7.4
Selenium	<0.2 j
Silver	<0.2
Zinc	40

Analysis For Total Metals By EPA Method 6020B

Client ID:	DA-2	Client:	Crete Consulting
Date Received:	07/26/24	Project:	Maralco, F&BI 407386
Date Extracted:	07/29/24	Lab ID:	407386-02
Date Analyzed:	07/31/24	Data File:	407386-02.137
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Antimony	0.81
Arsenic	13
Cadmium	0.85
Chromium	9.4
Cobalt	4.2
Copper	23
Lead	49
Nickel	8.3
Manganese	230
Mercury	<0.2
Selenium	<0.2 j
Silver	<0.2
Zinc	78

Analysis For Total Metals By EPA Method 6020B

Client ID:	DA-3	Client:	Crete Consulting
Date Received:	07/26/24	Project:	Maralco, F&BI 407386
Date Extracted:	07/29/24	Lab ID:	407386-03
Date Analyzed:	07/31/24	Data File:	407386-03.139
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Antimony	0.77
Arsenic	12
Cadmium	0.54
Chromium	8.2
Cobalt	3.9
Copper	18
Lead	37
Manganese	200
Mercury	<0.2
Nickel	7.6
Selenium	<0.2 j
Silver	<0.2
Zinc	65

Analysis For Total Metals By EPA Method 6020B

Client ID:	DA-4	Client:	Crete Consulting
Date Received:	07/26/24	Project:	Maralco, F&BI 407386
Date Extracted:	07/29/24	Lab ID:	407386-04
Date Analyzed:	07/31/24	Data File:	407386-04.141
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Antimony	0.40
Arsenic	5.1
Cadmium	0.52
Chromium	8.4
Cobalt	4.0
Copper	22
Lead	39
Nickel	6.9
Manganese	200
Mercury	<0.2
Selenium	<0.2 j
Silver	<0.2
Zinc	59

Analysis For Total Metals By EPA Method 6020B

Client ID:	DA-5	Client:	Crete Consulting
Date Received:	07/26/24	Project:	Maralco, F&BI 407386
Date Extracted:	07/29/24	Lab ID:	407386-05
Date Analyzed:	07/31/24	Data File:	407386-05.143
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Antimony	0.40
Arsenic	5.0
Cadmium	0.68
Chromium	7.7
Cobalt	4.5
Copper	23
Lead	21
Nickel	8.4
Manganese	190
Mercury	<0.2
Selenium	<0.2 j
Silver	<0.2
Zinc	210

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Crete Consulting
Date Received:	NA	Project:	Maralco, F&BI 407386
Date Extracted:	07/29/24	Lab ID:	I4-603 mb
Date Analyzed:	07/31/24	Data File:	I4-603 mb.134
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Antimony	<0.2
Arsenic	<0.2
Cadmium	<0.2
Chromium	<0.4
Cobalt	<0.2
Copper	<0.54
Lead	<0.2
Nickel	<1
Manganese	<0.44
Mercury	<0.2
Selenium	<0.2 j
Silver	<0.2
Zinc	<3.4

Date of Report: 08/12/24
Date Received: 07/26/24
Project: Maralco, F&BI 407386
Date Extracted: 07/29/24
Date Analyzed: 08/06/24, 08/07/24

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TRACE TOTAL MERCURY USING EPA METHOD 1631E

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Total Mercury
DA-1 407386-01	0.063
DA-2 407386-02	0.10
DA-3 407386-03	0.10
DA-4 407386-04	0.064
DA-5 407386-05	0.11
Method Blank i4-603 mb	<0.02 k j

Date of Report: 08/12/24
Date Received: 07/26/24
Project: Maralco, F&BI 407386

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENES USING EPA METHOD 8021B

Laboratory Code: 407269-01 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	1.0	88	70-130
Toluene	mg/kg (ppm)	1.0	88	70-130
Ethylbenzene	mg/kg (ppm)	1.0	95	70-130
Xylenes	mg/kg (ppm)	3.0	97	70-130

Date of Report: 08/12/24
Date Received: 07/26/24
Project: Maralco, F&BI 407386

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 407393-04 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	63	103	103	63-146	0

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	106	77-123

Date of Report: 08/12/24
Date Received: 07/26/24
Project: Maralco, F&BI 407386

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR PAHS BY EPA METHOD 8270E SIM

Laboratory Code: 407408-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Naphthalene	mg/kg (ppm)	0.5	<0.005	75	91	50-150	19
2-Methylnaphthalene	mg/kg (ppm)	0.5	<0.005	69	84	50-150	20
1-Methylnaphthalene	mg/kg (ppm)	0.5	<0.005	68	82	50-150	19
Acenaphthylene	mg/kg (ppm)	0.5	<0.005	68	92	50-150	30 vo
Acenaphthene	mg/kg (ppm)	0.5	<0.005	61	83	50-150	31 vo
Fluorene	mg/kg (ppm)	0.5	<0.005	62	85	50-150	31 vo
Phenanthrene	mg/kg (ppm)	0.5	<0.005	64	77	50-150	18
Anthracene	mg/kg (ppm)	0.5	<0.005	66	81	50-150	20
Fluoranthene	mg/kg (ppm)	0.5	<0.005	72	84	50-150	15
Pyrene	mg/kg (ppm)	0.5	<0.005	72	92	50-150	24 vo
Benz(a)anthracene	mg/kg (ppm)	0.5	<0.005	72	87	50-150	19
Chrysene	mg/kg (ppm)	0.5	<0.005	70	83	50-150	17
Benzo(b)fluoranthene	mg/kg (ppm)	0.5	<0.005	76	92	50-150	19
Benzo(k)fluoranthene	mg/kg (ppm)	0.5	<0.005	72	86	50-150	18
Benzo(a)pyrene	mg/kg (ppm)	0.5	<0.005	64	78	50-150	20
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.5	<0.005	60	80	50-150	29 vo
Dibenz(a,h)anthracene	mg/kg (ppm)	0.5	<0.005	62	81	50-150	27 vo
Benzo(g,h,i)perylene	mg/kg (ppm)	0.5	<0.005	56	77	50-150	32 vo

Date of Report: 08/12/24
Date Received: 07/26/24
Project: Maralco, F&BI 407386

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR PAHS BY EPA METHOD 8270E SIM

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Naphthalene	mg/kg (ppm)	0.5	85	70-130
2-Methylnaphthalene	mg/kg (ppm)	0.5	78	70-130
1-Methylnaphthalene	mg/kg (ppm)	0.5	76	70-130
Acenaphthylene	mg/kg (ppm)	0.5	82	70-130
Acenaphthene	mg/kg (ppm)	0.5	74	70-130
Fluorene	mg/kg (ppm)	0.5	75	70-130
Phenanthrene	mg/kg (ppm)	0.5	79	70-130
Anthracene	mg/kg (ppm)	0.5	81	70-130
Fluoranthene	mg/kg (ppm)	0.5	86	70-130
Pyrene	mg/kg (ppm)	0.5	114	70-130
Benz(a)anthracene	mg/kg (ppm)	0.5	90	70-130
Chrysene	mg/kg (ppm)	0.5	89	70-130
Benzo(b)fluoranthene	mg/kg (ppm)	0.5	106	70-130
Benzo(k)fluoranthene	mg/kg (ppm)	0.5	97	70-130
Benzo(a)pyrene	mg/kg (ppm)	0.5	82	70-130
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.5	93	70-130
Dibenz(a,h)anthracene	mg/kg (ppm)	0.5	95	70-130
Benzo(g,h,i)perylene	mg/kg (ppm)	0.5	89	70-130

Date of Report: 08/12/24
Date Received: 07/26/24
Project: Maralco, F&BI 407386

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 407387-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Antimony	mg/kg (ppm)	20	1.46	100	100	75-125	0
Arsenic	mg/kg (ppm)	10	2.83	99 b	101 b	75-125	2 b
Cadmium	mg/kg (ppm)	10	<1	99	98	75-125	1
Chromium	mg/kg (ppm)	50	13.6	86 b	83 b	75-125	4 b
Cobalt	mg/kg (ppm)	20	5.49	81 b	85 b	75-125	5 b
Copper	mg/kg (ppm)	50	26.6	88 b	76 b	75-125	15 b
Lead	mg/kg (ppm)	50	48.1	112 b	140 b	75-125	22 b
Manganese	mg/kg (ppm	20	334	0 b	0 b	75-125	nm
Mercury	mg/kg (ppm	5	<1	101	99	75-125	2
Nickel	mg/kg (ppm)	25	24.1	82 b	82 b	75-125	0 b
Selenium	mg/kg (ppm)	5	<1	92	92	75-125	0
Silver	mg/kg (ppm)	10	<1	98	96	75-125	2
Zinc	mg/kg (ppm)	50	51.8	88 b	102 b	75-125	15 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Antimony	mg/kg (ppm)	20	107	80-120
Arsenic	mg/kg (ppm)	10	99	80-120
Cadmium	mg/kg (ppm)	10	102	80-120
Chromium	mg/kg (ppm)	50	104	80-120
Cobalt	mg/kg (ppm)	20	106	80-120
Copper	mg/kg (ppm)	50	104	80-120
Lead	mg/kg (ppm)	50	102	80-120
Manganese	mg/kg (ppm)	20	104	80-120
Mercury	mg/kg (ppm)	5	104	80-120
Nickel	mg/kg (ppm)	25	106	80-120
Selenium	mg/kg (ppm)	5	101	80-120
Silver	mg/kg (ppm)	10	101	80-120
Zinc	mg/kg (ppm)	50	103	80-120

Date of Report: 08/12/24
Date Received: 07/26/24
Project: Maralco, F&BI 407386

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TRACE TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 407387-01 x10 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Mercury	mg/kg (ppm)	5	0.37	125	151 vo	71-125	19

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Mercury	mg/kg (ppm)	5	114	68-143

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria, biased low; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the standard reporting limit. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

k – The calibration results for the analyte were outside of acceptance criteria, biased high, and the analyte was not detected in the sample.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

407386

SAMPLE CHAIN OF CUSTODY

07/26/24 Page 1 of 1 VS A4/M3

Report To Jones, Halnsworth, Stevens
Company CRETE Consulting, Inc.
Address
City, State, ZIP
Phone 832.330.1359 Email

SAMPLERS (signature) Rusty Jones R. Jones
PROJECT NAME: Maralco
PO #: Maralco
REMARKS Project Metals list: Al, As, Cd, Cr, Cu, Fe, Pb, Hg, Ag, Se, Zn
Project specific RLs? - Yes / No
INVOICE TO: CRETE

TURNAROUND TIME
☒ Standard turnaround
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Archive samples
☐ Other
Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Naphthalenes	Metals (see Project List)			Project Metals Notes Al, As, Cd, Cr, Cu, Fe, Pb, Hg, Se, Ag, Zn
DA-1	01 A-F	7.25.2024	1015	SOIL	6	X		X			X		X	X			+ Sb per RJ
DA-2	02		1020		6	X		X			X		X	X			7/26/24 ME
DA-3	03		1025		6	X		X			X		X	X			+ Co and Mn per
DA-4	04		1030		6	X		X			X		X	X			GH 7/29/24 ME
DA-5	05	↓	1035	↓	6	X		X			X		X	X			+Ni per RJ 08/23/24 ME

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: R. Jones	Rusty Jones	CRETE	7.26.24	0836
Received by:	Nhan Pham	FEBT	7/26/24	0836
Relinquished by:				
Received by:		Samples received at 1 °C		

Friedman & Bruya, Inc.
Ph. (206) 285-8282

SAMPLE CONDITION UPON RECEIPT CHECKLIST

PROJECT # 407386 CLIENT Crete INITIALS/DATE: (NP) 7/26/24

If custody seals are present on cooler, are they intact? ☑ NA ☐ YES ☐ NO

Cooler/Sample temperature 1 °C
Thermometer ID: Fluke 96312917

Were samples received on ice/cold packs? ☑ YES ☐ NO

How did samples arrive?
☑ Over the Counter ☐ Picked up by F&BI ☐ FedEx/UPS/GSO

Is there a Chain-of-Custody* (COC)? ☑ YES ☐ NO Initials/Date: (NP) 7/26
*or other representative documents, letters, and/or shipping memos

Number of days samples have been sitting prior to receipt at laboratory 1 days

Are the samples clearly identified? (explain "no" answer below) ☑ YES ☐ NO

Were all sample containers received intact (i.e. not broken, leaking etc.)? (explain "no" answer below) ☑ YES ☐ NO

Were appropriate sample containers used? ☑ YES ☐ NO ☐ Unknown

If custody seals are present on samples, are they intact? ☑ NA ☐ YES ☐ NO

Are samples requiring no headspace, headspace free? ☑ NA ☐ YES ☐ NO

Is the following information provided on the COC, and does it match the sample label?
(explain "no" answer below)

Sample ID's	☑ Yes ☐ No	☐ Not on COC/label
Date Sampled	☑ Yes ☐ No	☐ Not on COC/label
Time Sampled	☑ Yes ☐ No	☐ Not on COC/label
# of Containers	☑ Yes ☐ No	
Relinquished	☑ Yes ☐ No	
Requested analysis	☑ Yes ☐ On Hold	

Other comments (use a separate page if needed)

Air Samples: Were any additional canisters/tubes received? ☑ NA ☐ YES ☐ NO

Number of unused TO15 canisters _____ Number of unused TO17 tubes _____

3600 Fremont Ave N
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Friedman & Bruya
Michael Erdahl
5500 4th Ave S
Seattle, WA 98108

RE: 407386, E-308
Work Order Number: 2407451

August 05, 2024

Attention Michael Erdahl:

Fremont Analytical, Inc, an Alliance Technical Group company, received 5 sample(s) on 7/26/2024 for the analyses presented in the following report.

Sample Moisture (Percent Moisture)
Total Metals by EPA 6020B

All analyses were performed according to our accredited Quality Assurance program. Please contact the laboratory if you should have any questions about the results.

Please note, while the appearance of our logo and branding will update, our commitment to accuracy, speed, and customer service remain values celebrated and shared by Alliance Technical Group. Thank you for the opportunity to serve you.

Sincerely,

Brianna Barnes
Project Manager

DoD-ELAP Accreditation #79636 by PJLA, ISO/IEC 17025:2017 and QSM 5.4 for Environmental Testing
ORELAP Certification: WA 100009 (NELAP Recognized) for Environmental Testing
Washington State Department of Ecology Accredited for Environmental Testing, Lab ID C910

Original

Date: *08/05/2024*

CLIENT: Friedman & Bruya
Project: 407386
Work Order: 2407451

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2407451-001	DA-1	07/25/2024 10:15 AM	07/26/2024 2:05 PM
2407451-002	DA-2	07/25/2024 10:20 AM	07/26/2024 2:05 PM
2407451-003	DA-3	07/25/2024 10:25 AM	07/26/2024 2:05 PM
2407451-004	DA-4	07/25/2024 10:30 AM	07/26/2024 2:05 PM
2407451-005	DA-5	07/25/2024 10:35 AM	07/26/2024 2:05 PM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Original

Case Narrative

WO#: **2407451**

Date: **8/5/2024**

CLIENT: Friedman & Bruya
Project: 407386

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

CLIENT: Friedman & Bruya
Project: 407386

Lab ID: 2407451-001 **Collection Date:** 7/25/2024 10:15:00 AM
Client Sample ID: **DA-1** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA 6020B				Batch ID: 44677		Analyst: ME
Aluminum	9,650	40.9		mg/Kg-dry	1	8/2/2024 1:42:00 PM
Iron	10,600	6.64		mg/Kg-dry	1	8/2/2024 1:42:00 PM
Sample Moisture (Percent Moisture)				Batch ID: R93300		Analyst: DI
Percent Moisture	9.41	0.500		wt%	1	7/29/2024 9:18:32 AM

Lab ID: 2407451-002 **Collection Date:** 7/25/2024 10:20:00 AM
Client Sample ID: **DA-2** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA 6020B				Batch ID: 44677		Analyst: ME
Aluminum	11,700	45.5		mg/Kg-dry	1	8/2/2024 1:44:00 PM
Iron	14,100	7.40		mg/Kg-dry	1	8/2/2024 1:44:00 PM
Sample Moisture (Percent Moisture)				Batch ID: R93300		Analyst: DI
Percent Moisture	12.8	0.500		wt%	1	7/29/2024 9:18:32 AM

Lab ID: 2407451-003 **Collection Date:** 7/25/2024 10:25:00 AM
Client Sample ID: **DA-3** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA 6020B				Batch ID: 44677		Analyst: ME
Aluminum	9,940	44.3		mg/Kg-dry	1	8/2/2024 1:47:00 PM
Iron	11,800	7.20		mg/Kg-dry	1	8/2/2024 1:47:00 PM
Sample Moisture (Percent Moisture)				Batch ID: R93300		Analyst: DI
Percent Moisture	12.5	0.500		wt%	1	7/29/2024 9:18:32 AM

CLIENT: Friedman & Bruya
Project: 407386

Lab ID: 2407451-004 **Collection Date:** 7/25/2024 10:30:00 AM
Client Sample ID: **DA-4** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA 6020B				Batch ID: 44677		Analyst: ME
Aluminum	10,400	43.0		mg/Kg-dry	1	8/2/2024 1:49:00 PM
Iron	12,100	6.98		mg/Kg-dry	1	8/2/2024 1:49:00 PM
Sample Moisture (Percent Moisture)				Batch ID: R93300		Analyst: DI
Percent Moisture	9.11	0.500		wt%	1	7/29/2024 9:18:32 AM

Lab ID: 2407451-005 **Collection Date:** 7/25/2024 10:35:00 AM
Client Sample ID: **DA-5** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA 6020B				Batch ID: 44677		Analyst: ME
Aluminum	10,400	44.7		mg/Kg-dry	1	8/2/2024 1:51:00 PM
Iron	24,800	72.7	D	mg/Kg-dry	10	8/5/2024 12:14:00 PM
Sample Moisture (Percent Moisture)				Batch ID: R93300		Analyst: DI
Percent Moisture	12.0	0.500		wt%	1	7/29/2024 9:18:32 AM

Work Order: 2407451
CLIENT: Friedman & Bruya
Project: 407386

QC SUMMARY REPORT

Total Metals by EPA 6020B

Sample ID: **MB-44677**	SampType: **MBLK**	Units: **mg/Kg**	Prep Date: **7/30/2024**	RunNo: **93402**
Client ID: **MBLKS**	Batch ID: **44677**		Analysis Date: **8/1/2024**	SeqNo: **1949501**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	40.0									
Iron	ND	6.50									

Sample ID: **LCS-44677**	SampType: **LCS**	Units: **mg/Kg**	Prep Date: **7/30/2024**	RunNo: **93402**
Client ID: **LCSS**	Batch ID: **44677**		Analysis Date: **8/1/2024**	SeqNo: **1949502**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	380	40.0	400.0	0	95.1	80	120				
Iron	399	6.50	400.0	0	99.8	80	120				

Sample ID: **LCSD-44677**	SampType: **LCSD**	Units: **mg/Kg**	Prep Date: **7/30/2024**	RunNo: **93402**
Client ID: **LCSS02**	Batch ID: **44677**		Analysis Date: **8/1/2024**	SeqNo: **1949503**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	356	40.0	400.0	0	89.0	80	120	380.4	6.68	20	
Iron	379	6.50	400.0	0	94.7	80	120	399.3	5.25	20	

Sample ID: **2407423-020ADUP**	SampType: **DUP**	Units: **mg/Kg-dry**	Prep Date: **7/30/2024**	RunNo: **93402**
Client ID: **BATCH**	Batch ID: **44677**		Analysis Date: **8/1/2024**	SeqNo: **1949505**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	11,100	43.5						10,800	2.55	20	E
Iron	12,900	7.07						15,660	19.4	20	E

Sample ID: **2407423-020AMS**	SampType: **MS**	Units: **mg/Kg-dry**	Prep Date: **7/30/2024**	RunNo: **93402**
Client ID: **BATCH**	Batch ID: **44677**		Analysis Date: **8/1/2024**	SeqNo: **1949506**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	11,300	44.9	449.2	10,800	117	75	125				E
Iron	14,700	7.30	449.2	15,660	-221	75	125				ES

Work Order: 2407451
CLIENT: Friedman & Bruya
Project: 407386

QC SUMMARY REPORT

Total Metals by EPA 6020B

Sample ID: **2407423-020AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **7/30/2024** RunNo: **93402**
Client ID: **BATCH** Batch ID: **44677** Analysis Date: **8/1/2024** SeqNo: **1949506**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

NOTES:
S - Spiked amount was low relative to sample concentration. Outlying spike recoveries may be expected.

Sample ID: **2407423-020AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **7/30/2024** RunNo: **93402**
Client ID: **BATCH** Batch ID: **44677** Analysis Date: **8/1/2024** SeqNo: **1949507**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	10,100	44.6	445.7	10,800	-166	75	125	11,330	11.8	20	ES
Iron	11,700	7.24	445.7	15,660	-897	75	125	14,670	22.8	20	ERS

NOTES:
S,R - Spiked amount was low relative to sample concentration. Outlying spike recovery and RPDs may be expected.

Sample Log-In Check List

Client Name:	FB	Work Order Number:	2407451
Logged by:	Morgan Wilson	Date Received:	7/26/2024 2:05:00 PM

Chain of Custody

1.	Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2.	How was the sample delivered?	Client		

Log In

3.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes ☐	No ☐	Not Present ☑
4.	Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5.	Were all items received at a temperature of >2°C to 6°C *	Yes ☑	No ☐	NA ☐
6.	Sample(s) in proper container(s)?	Yes ☑	No ☐	
7.	Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8.	Are samples properly preserved?	Yes ☑	No ☐	
9.	Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10.	Is there headspace in the VOA vials?	Yes ☐	No ☐	NA ☑
11.	Did all samples containers arrive in good condition(unbroken)?	Yes ☑	No ☐	
12.	Does paperwork match bottle labels?	Yes ☑	No ☐	
13.	Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14.	Is it clear what analyses were requested?	Yes ☑	No ☐	
15.	Were all hold times (except field parameters, pH e.g.) able to be met?	Yes ☑	No ☐	

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified:		Date:	
By Whom:		Via:	☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:			
Client Instructions:			

17. Additional remarks:

Item Information

Item #	Temp ºC
Sample	5.9

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2407451

Page # 1 of 1

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 5500 4th Ave S

City, State, ZIP Seattle, WA 98108

Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER
Alliance Technical Group

PROJECT NAME/NO.	PO #
407386	E-308

REMARKS
EIM

TURNAROUND TIME
☒ Standard TAT
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED: Al and Fe										Notes
DA-1		7/25/2024	1015	soil	1	x										
DA-2		7/25/2024	1020	soil	1	x										
DA-3		7/25/2024	1025	soil	1	x										
DA-4		7/25/2024	1030	soil	1	x										
DA-5		7/25/2024	1035	soil	1	x										

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Michael Erdahl	Friedman & Bruya	7/26/24	0933
Received by:		Nathan Kalles	ATG	7/26/24	1405
Relinquished by:					
Received by:					

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Ave South
Seattle, WA 98108-2419
(206) 285-8282
office@friedmanandbruya.com
www.friedmanandbruya.com

September 5, 2024

Rusty Jones, Project Manager
Crete Consulting
16300 Christensen Road, Suite 214
Tukwila, WA 98188

Dear Mr Jones:

Included is the amended report from the testing of material submitted on July 29, 2024 from the Maralco, F&BI 407422 project. Nickel has been added to the report.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Grant Hainsworth, Jamie Stevens
CTC0807R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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Eric Young, B.S.

5500 4th Ave South
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office@friedmanandbruya.com
www.friedmanandbruya.com

August 7, 2024

Rusty Jones, Project Manager
Crete Consulting
16300 Christensen Road, Suite 214
Tukwila, WA 98188

Dear Mr Jones:

Included are the results from the testing of material submitted on July 29, 2024 from the Maralco, F&BI 407422 project. There are 15 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Grant Hainsworth, Jamie Stevens
CTC0807R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on July 29, 2024 by Friedman & Bruya, Inc. from the Crete Consulting Maralco, F&BI 407422 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Crete Consulting
407422 -01	HP-GS-01
407422 -02	HP-GS-02
407422 -03	HP-GS-03

The samples were sent to Alliance Technical Group for aluminum and iron analyses. The report is enclosed.

The 6020B selenium calibration standard exceeded the acceptance criteria for sample HP-GS-03. The metal was not detected, therefore this did not represent an out of control condition, and the results are not considered estimates.

The 6020B matrix spike and matrix spike duplicate did not meet the acceptance criteria for selenium. The laboratory control sample passed the acceptance criteria, therefore the results were due to matrix effect.

All other quality control requirements were acceptable.

Analysis For Total Metals By EPA Method 6020B

Client ID:	HP-GS-01	Client:	Crete Consulting
Date Received:	07/29/24	Project:	Maralco, F&BI 407422
Date Extracted:	07/30/24	Lab ID:	407422-01
Date Analyzed:	07/30/24	Data File:	407422-01.051
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Antimony	7.2
Arsenic	11
Cadmium	0.84
Chromium	25
Cobalt	4.0
Copper	210
Lead	23
Manganese	200
Nickel	14
Selenium	<0.2
Silver	<0.2

Analysis For Total Metals By EPA Method 6020B

Client ID:	HP-GS-01	Client:	Crete Consulting
Date Received:	07/29/24	Project:	Maralco, F&BI 407422
Date Extracted:	07/30/24	Lab ID:	407422-01
Date Analyzed:	08/01/24	Data File:	407422-01.165
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Zinc	180

Analysis For Total Metals By EPA Method 6020B

Client ID:	HP-GS-02	Client:	Crete Consulting
Date Received:	07/29/24	Project:	Maralco, F&BI 407422
Date Extracted:	07/30/24	Lab ID:	407422-02
Date Analyzed:	07/30/24	Data File:	407422-02.052
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Antimony	2.8
Arsenic	5.7
Cadmium	0.26
Chromium	15
Cobalt	4.5
Copper	58
Lead	10
Manganese	150
Nickel	14
Selenium	0.23
Silver	<0.2

Analysis For Total Metals By EPA Method 6020B

Client ID:	HP-GS-02	Client:	Crete Consulting
Date Received:	07/29/24	Project:	Maralco, F&BI 407422
Date Extracted:	07/30/24	Lab ID:	407422-02
Date Analyzed:	08/01/24	Data File:	407422-02.166
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Zinc	55

Analysis For Total Metals By EPA Method 6020B

Client ID:	HP-GS-03	Client:	Crete Consulting
Date Received:	07/29/24	Project:	Maralco, F&BI 407422
Date Extracted:	07/30/24	Lab ID:	407422-03
Date Analyzed:	07/30/24	Data File:	407422-03.196
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Antimony	13
Arsenic	2.5
Cadmium	4.1
Chromium	110
Cobalt	1.9
Copper	1,300
Nickel	42
Silver	0.57

Analysis For Total Metals By EPA Method 6020B

Client ID:	HP-GS-03	Client:	Crete Consulting
Date Received:	07/29/24	Project:	Maralco, F&BI 407422
Date Extracted:	07/30/24	Lab ID:	407422-03 x2
Date Analyzed:	08/05/24	Data File:	407422-03 x2.244
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Selenium	<0.6 j k

Analysis For Total Metals By EPA Method 6020B

Client ID:	HP-GS-03	Client:	Crete Consulting
Date Received:	07/29/24	Project:	Maralco, F&BI 407422
Date Extracted:	07/30/24	Lab ID:	407422-03
Date Analyzed:	08/01/24	Data File:	407422-03.167
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Zinc	1,000

Analysis For Total Metals By EPA Method 6020B

Client ID:	HP-GS-03	Client:	Crete Consulting
Date Received:	07/29/24	Project:	Maralco, F&BI 407422
Date Extracted:	07/30/24	Lab ID:	407422-03 x5
Date Analyzed:	07/30/24	Data File:	407422-03 x5.195
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Manganese	840

Analysis For Total Metals By EPA Method 6020B

Client ID:	HP-GS-03	Client:	Crete Consulting
Date Received:	07/29/24	Project:	Maralco, F&BI 407422
Date Extracted:	07/30/24	Lab ID:	407422-03 x5
Date Analyzed:	08/01/24	Data File:	407422-03 x5.168
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Lead	120

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Crete Consulting
Date Received:	Not Applicable	Project:	Maralco, F&BI 407422
Date Extracted:	07/30/24	Lab ID:	I4-606 mb2
Date Analyzed:	07/30/24	Data File:	I4-606 mb2.180
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Antimony	<0.5
Arsenic	<0.2
Cadmium	<0.2
Chromium	<0.5
Cobalt	<0.2
Copper	<0.6
Lead	<0.2
Manganese	<0.5
Nickel	<1
Selenium	<0.2
Silver	<0.2
Zinc	<3.4

Date of Report: 08/07/24
Date Received: 07/29/24
Project: Maralco, F&BI 407422
Date Extracted: 07/30/24
Date Analyzed: 07/31/24

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR TOTAL MERCURY
USING EPA METHOD 1631E
Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Total Mercury
HP-GS-01 407422-01	0.078
HP-GS-02 407422-02	0.053
HP-GS-03 407422-03	0.20
Method Blank i4-606 mb2	<0.01

Date of Report: 08/07/24
Date Received: 07/29/24
Project: Maralco, F&BI 407422

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 407405-21 x5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Antimony	mg/kg (ppm)	20	<5	87	104	75-125	18
Arsenic	mg/kg (ppm)	10	5.07	108 b	116 b	75-125	7 b
Cadmium	mg/kg (ppm)	10	<5	100	120	75-125	18
Chromium	mg/kg (ppm)	50	8.81	93	109	75-125	16
Cobalt	mg/kg (ppm)	20	<5	90	105	75-125	15
Copper	mg/kg (ppm)	50	<25	86	97	75-125	12
Lead	mg/kg (ppm)	50	10.4	104 b	112 b	75-125	7 b
Manganese	mg/kg (ppm	20	101	425 b	296 b	75-125	36 b
Nickel	mg/kg (ppm)	25	12.5	96 b	114 b	75-125	17 b
Selenium	mg/kg (ppm)	5	<5	88	113	75-125	25 vo
Silver	mg/kg (ppm)	10	<5	101	120	75-125	17
Zinc	mg/kg (ppm)	50	<25	100	106	75-125	6

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Antimony	mg/kg (ppm)	20	97	80-120
Arsenic	mg/kg (ppm)	10	99	80-120
Cadmium	mg/kg (ppm)	10	98	80-120
Chromium	mg/kg (ppm)	50	95	80-120
Cobalt	mg/kg (ppm)	20	94	80-120
Copper	mg/kg (ppm)	50	91	80-120
Lead	mg/kg (ppm)	50	96	80-120
Manganese	mg/kg (ppm)	20	94	80-120
Nickel	mg/kg (ppm)	25	93	80-120
Selenium	mg/kg (ppm)	5	104	80-120
Silver	mg/kg (ppm)	10	100	80-120
Zinc	mg/kg (ppm)	50	91	80-120

Date of Report: 08/07/24
Date Received: 07/29/24
Project: Maralco, F&BI 407422

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 407405-21 x10 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Mercury	mg/kg (ppm)	5	<0.025	84	103	71-125	20

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Mercury	mg/kg (ppm)	5	97	68-143

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria, biased low; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the standard reporting limit. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

k – The calibration results for the analyte were outside of acceptance criteria, biased high, and the analyte was not detected in the sample.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

407422

SAMPLE CHAIN OF CUSTODY

07/29/24

M2

Page # 1 of 1

Report To Jones, Hainsworth, Stevens

Company CRETE Consulting, Inc.

Address

City, State, ZIP

Phone 832.330.1359 Email

SAMPLERS (signature): Rusty Jones R. Jones

PROJECT NAME: Maralco

PO #: Maralco

REMARKS: Project Metals list: Sb, Al, As, Cd, Cr, Cu, Fe, Pb, Hg, Se, Zn, Ag

Project specific RLs? - Yes / No

INVOICE TO: CRETE

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Archive samples
- [ ] Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Metals				Notes
HP-GS-01	01	7/29/2024	1145	~~SOIL SOLIDS~~ SOILS	1								X				~~X~~ Al, Sb, As, Cd, Cr, Cu, Fe, Pb, Hg, Se, Zn, Ag
HP-GS-02	02	↓	1150	~~SOIL SOLIDS~~	1								X				+ Mn and Co
HP-GS-03	03	↓	1155	SOLIDS	1								X				per GH 7/29/24 ME
																	+Ni per RJ 08/23/24 ME

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: R. Jones	Rusty Jones	CRETE	7/29/2024	1503
Received by: AmWBruya	AmWBruya	F&B	7/29/24	1503
Relinquished by:				
Received by:		Samples received at 5 °C		

Friedman & Bruya, Inc.
Ph. (206) 285-8282

SAMPLE CONDITION UPON RECEIPT CHECKLIST

PROJECT # 407422 CLIENT Crete INITIALS/ DATE: AWB 7/29

If custody seals are present on cooler, are they intact? ☒ NA ☐ YES ☐ NO

Cooler/Sample temperature 5 °C
Thermometer ID: Fluke 96312917

Were samples received on ice/cold packs? ☒ YES ☐ NO

How did samples arrive?
☒ Over the Counter ☐ Picked up by F&BI ☐ FedEx/UPS/GSO

Is there a Chain-of-Custody* (COC)? ☑ YES ☐ NO Initials/ Date: AWB 7/30
*or other representative documents, letters, and/or shipping memos

Number of days samples have been sitting prior to receipt at laboratory 0 days

Are the samples clearly identified? (explain "no" answer below) ☑ YES ☐ NO

Were all sample containers received intact (i.e. not broken, leaking etc.)? (explain "no" answer below) ☑ YES ☐ NO

Were appropriate sample containers used? ☑ YES ☐ NO ☐ Unknown

If custody seals are present on samples, are they intact? ☐ NA ☐ YES ☐ NO

Are samples requiring no headspace, headspace free? ☐ NA ☐ YES ☐ NO

Is the following information provided on the COC, and does it match the sample label?
(explain "no" answer below)

Sample ID's	☑ Yes ☐ No	☐ Not on COC/label
Date Sampled	☑ Yes ☐ No	☐ Not on COC/label
Time Sampled	☑ Yes ☐ No	☐ Not on COC/label
# of Containers	☑ Yes ☐ No	
Relinquished	☑ Yes ☐ No	
Requested analysis	☑ Yes ☐ On Hold	

Other comments (use a separate page if needed)

Air Samples: Were any additional canisters/tubes received? ☒ NA ☐ YES ☐ NO

Number of unused TO15 canisters _____ Number of unused TO17 tubes _____

3600 Fremont Ave N
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Friedman & Bruya
Michael Erdahl
5500 4th Ave S
Seattle, WA 98108

RE: 407422, E-323mg
Work Order Number: 2407487

August 05, 2024

Attention Michael Erdahl:

Fremont Analytical, Inc, an Alliance Technical Group company, received 3 sample(s) on 7/30/2024 for the analyses presented in the following report.

Sample Moisture (Percent Moisture)
Total Metals by EPA 6020B

All analyses were performed according to our accredited Quality Assurance program. Please contact the laboratory if you should have any questions about the results.

Please note, while the appearance of our logo and branding will update, our commitment to accuracy, speed, and customer service remain values celebrated and shared by Alliance Technical Group. Thank you for the opportunity to serve you.

Sincerely,

Brianna Barnes
Project Manager

DoD-ELAP Accreditation #79636 by PJLA, ISO/IEC 17025:2017 and QSM 5.4 for Environmental Testing
ORELAP Certification: WA 100009 (NELAP Recognized) for Environmental Testing
Washington State Department of Ecology Accredited for Environmental Testing, Lab ID C910

Original

Date: *08/06/2024*

CLIENT: Friedman & Bruya
Project: 407422
Work Order: 2407487

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2407487-001	HP-GS-01	07/29/2024 11:45 AM	07/30/2024 1:07 PM
2407487-002	HP-GS-02	07/29/2024 11:50 AM	07/30/2024 1:07 PM
2407487-003	HP-GS-03	07/29/2024 11:55 AM	07/30/2024 1:07 PM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Case Narrative

WO#: **2407487**

Date: **8/5/2024**

CLIENT: Friedman & Bruya
Project: 407422

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

CLIENT: Friedman & Bruya
Project: 407422

Lab ID: 2407487-001 **Collection Date:** 7/29/2024 11:45:00 AM
Client Sample ID: **HP-GS-01** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA 6020B				Batch ID: 44708		Analyst: SLL
Aluminum	27,200	441	D	mg/Kg-dry	10	8/5/2024 12:57:00 PM
Iron	9,380	71.6	D	mg/Kg-dry	10	8/5/2024 12:57:00 PM
Sample Moisture (Percent Moisture)				Batch ID: R93338		Analyst: GHG
Percent Moisture	14.1	0.500		wt%	1	7/31/2024 9:28:46 AM

Lab ID: 2407487-002 **Collection Date:** 7/29/2024 11:50:00 AM
Client Sample ID: **HP-GS-02** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA 6020B				Batch ID: 44708		Analyst: SLL
Aluminum	94,000	469	D	mg/Kg-dry	10	8/5/2024 12:59:00 PM
Iron	3,870	76.3	D	mg/Kg-dry	10	8/5/2024 12:59:00 PM
Sample Moisture (Percent Moisture)				Batch ID: R93338		Analyst: GHG
Percent Moisture	12.7	0.500		wt%	1	7/31/2024 9:28:46 AM

Lab ID: 2407487-003 **Collection Date:** 7/29/2024 11:55:00 AM
Client Sample ID: **HP-GS-03** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA 6020B				Batch ID: 44708		Analyst: SLL
Aluminum	20,100	67.2		mg/Kg-dry	1	8/5/2024 12:38:00 PM
Iron	15,700	10.9		mg/Kg-dry	1	8/5/2024 12:38:00 PM
Sample Moisture (Percent Moisture)				Batch ID: R93338		Analyst: GHG
Percent Moisture	42.3	0.500		wt%	1	7/31/2024 9:28:46 AM

Work Order: 2407487
CLIENT: Friedman & Bruya
Project: 407422

QC SUMMARY REPORT

Total Metals by EPA 6020B

Sample ID: **MB-44708**	SampType: **MBLK**	Units: **mg/Kg**	Prep Date: **8/2/2024**	RunNo: **93436**
Client ID: **MBLKS**	Batch ID: **44708**		Analysis Date: **8/5/2024**	SeqNo: **1950428**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	40.0									
Iron	ND	6.50									

Sample ID: **LCS-44708**	SampType: **LCS**	Units: **mg/Kg**	Prep Date: **8/2/2024**	RunNo: **93436**
Client ID: **LCSS**	Batch ID: **44708**		Analysis Date: **8/5/2024**	SeqNo: **1950429**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	372	40.0	400.0	0	92.9	80	120				
Iron	401	6.50	400.0	0	100	80	120				

Sample ID: **2408020-038AMS**	SampType: **MS**	Units: **mg/Kg-dry**	Prep Date: **8/2/2024**	RunNo: **93436**
Client ID: **BATCH**	Batch ID: **44708**		Analysis Date: **8/5/2024**	SeqNo: **1950407**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	8,180	41.1	411.2	9,056	-213	75	125				ES
Iron	9,520	6.68	411.2	10,350	-203	75	125				ES

NOTES:
S - Spiked amount was low relative to sample concentration. Outlying spike recoveries may be expected.

Sample ID: **2408020-038AMSD**	SampType: **MSD**	Units: **mg/Kg-dry**	Prep Date: **8/2/2024**	RunNo: **93436**
Client ID: **BATCH**	Batch ID: **44708**		Analysis Date: **8/5/2024**	SeqNo: **1950409**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	6,520	43.7	436.7	9,056	-580	75	125	8,180	22.5	20	ERS
Iron	7,320	7.10	436.7	10,350	-694	75	125	9,516	26.1	20	ERS

NOTES:
S - Spiked amount was low relative to sample concentration. Outlying spike recoveries may be expected.
R - High RPD observed.

Work Order: 2407487
CLIENT: Friedman & Bruya
Project: 407422

QC SUMMARY REPORT

Total Metals by EPA 6020B

Sample ID: **2408020-038APDS** SampType: **PDS** Units: **mg/Kg-dry** Prep Date: **8/2/2024** RunNo: **93436**
Client ID: **BATCH** Batch ID: **44708** Analysis Date: **8/5/2024** SeqNo: **1950410**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	8,230	44.7	447	9,060	-185	75	125				ES
Iron	9,660	7.27	447	10,400	-156	75	125				ES

NOTES:
S - Spiked amount was low relative to sample concentration. Outlying spike recoveries may be expected.

Sample Log-In Check List

Client Name:	FB	Work Order Number:	2407487
Logged by:	Clare Griggs	Date Received:	7/30/2024 1:07:00 PM

Chain of Custody

1.	Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2.	How was the sample delivered?	Courier		

Log In

3.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes ☐	No ☐	Not Present ☑
4.	Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5.	Were all items received at a temperature of >2°C to 6°C *	Yes ☑	No ☐	NA ☐
6.	Sample(s) in proper container(s)?	Yes ☑	No ☐	
7.	Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8.	Are samples properly preserved?	Yes ☑	No ☐	
9.	Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10.	Is there headspace in the VOA vials?	Yes ☐	No ☐	NA ☑
11.	Did all samples containers arrive in good condition(unbroken)?	Yes ☑	No ☐	
12.	Does paperwork match bottle labels?	Yes ☑	No ☐	
13.	Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14.	Is it clear what analyses were requested?	Yes ☑	No ☐	
15.	Were all hold times (except field parameters, pH e.g.) able to be met?	Yes ☑	No ☐	

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified:		Date:	
By Whom:		Via:	☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:			
Client Instructions:			

17. Additional remarks:

Item Information

Item #	Temp ºC
Sample	5.5

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2407487

Send Report To Michael Erdahl

Company Friedman & Bruya,

Address 5500 4th Ave S

City, State, ZIP Seattle, WA 98108

Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER
Alliance Technical Group

PROJECT NAME/NO.	PO #
407422	E-323mg

REMARKS

EIM

TURNAROUND TIME
☒ Standard
RUSH _____
Rush charges authorized by: _____

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED: Metals 6020 (Al, Fe)										Notes
HP-GS-01		7/29/2024	11:45	soil	1	x										
HP-GS-02		7/29/2024	11:50	soil	1	x										
HP-GS-03		7/29/2024	11:55	Soil	1	X										

Friedman & Bruya, Inc.
5500 4th Ave S
Seattle, WA 98115
Ph. (206) 285-8282
Fax (206) 283-5044

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Mac Goldman	Friedman and Bruya	7/30	9:00
Received by:		Briana Ballard	AJG	7/30	1:07PM
Relinquished by:					
Received by:					

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Ave South
Seattle, WA 98108-2419
(206) 285-8282
office@friedmanandbruya.com
www.friedmanandbruya.com

September 18, 2024

Rusty Jones, Project Manager
Crete Consulting
16300 Christensen Road, Suite 214
Tukwila, WA 98188

Dear Mr Jones:

Included are the results from the testing of material submitted on September 9, 2024 from the Maralco, F&BI 409087 project. There are 10 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Grant Hainsworth, Jamie Stevens
CTC0918R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on September 9, 2024 by Friedman & Bruya, Inc. from the Crete Consulting Maralco, F&BI 409087 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Crete Consulting
409087 -01	CS-A01-0.5
409087 -02	CS-A01-1
409087 -03	CS-A02-1
409087 -04	CS-A02-2

Samples CS-A01-0.5 and CS-A02-1 were sent to Alliance Technical Group for iron and aluminum analysis. The report is enclosed.

The 6020B zinc calibration standard exceeded the acceptance criteria for the method blank. The metal was not detected, therefore this did not represent an out of control condition, and the results are not considered estimates.

Several metals in the 6020B matrix spike and matrix spike duplicate did not meet the acceptance criteria. The laboratory control sample passed the acceptance criteria, therefore the results were due to matrix effect.

All other quality control requirements were acceptable.

Analysis For Total Metals By EPA Method 6020B

Client ID:	CS-A01-0.5	Client:	Crete Consulting
Date Received:	09/09/24	Project:	Maralco, F&BI 409087
Date Extracted:	09/12/24	Lab ID:	409087-01
Date Analyzed:	09/12/24	Data File:	409087-01.159
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Antimony	<0.5
Arsenic	1.9
Cadmium	<0.2
Chromium	7.3
Cobalt	3.2
Copper	18
Lead	3.2
Manganese	<0.4
Nickel	5.3
Selenium	<0.2
Silver	<0.2

Analysis For Total Metals By EPA Method 6020B

Client ID:	CS-A01-0.5	Client:	Crete Consulting
Date Received:	09/09/24	Project:	Maralco, F&BI 409087
Date Extracted:	09/12/24	Lab ID:	409087-01
Date Analyzed:	09/16/24	Data File:	409087-01.130
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Zinc	18

Analysis For Total Metals By EPA Method 6020B

Client ID:	CS-A02-1	Client:	Crete Consulting
Date Received:	09/09/24	Project:	Maralco, F&BI 409087
Date Extracted:	09/12/24	Lab ID:	409087-03
Date Analyzed:	09/12/24	Data File:	409087-03.160
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Antimony	<0.5
Arsenic	6.0
Cadmium	0.25
Chromium	14
Cobalt	6.7
Copper	32
Lead	5.5
Manganese	<0.4
Nickel	13
Selenium	<0.2
Silver	<0.2

Analysis For Total Metals By EPA Method 6020B

Client ID:	CS-A02-1	Client:	Crete Consulting
Date Received:	09/09/24	Project:	Maralco, F&BI 409087
Date Extracted:	09/12/24	Lab ID:	409087-03
Date Analyzed:	09/16/24	Data File:	409087-03.131
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Zinc	52

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Crete Consulting
Date Received:	Not Applicable	Project:	Maralco, F&BI 409087
Date Extracted:	09/12/24	Lab ID:	I4-754 mb
Date Analyzed:	09/12/24	Data File:	I4-754 mb.157
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Antimony	<0.5
Arsenic	<0.2
Cadmium	<0.2
Chromium	<0.4
Cobalt	<0.2
Copper	<0.53
Lead	<0.2
Manganese	<0.4
Nickel	<0.5
Selenium	<0.2
Silver	<0.2
Zinc	<3.3 k

Date of Report: 09/18/24
Date Received: 09/09/24
Project: Maralco, F&BI 409087
Date Extracted: 09/09/24
Date Analyzed: 09/10/24

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR TOTAL MERCURY
USING EPA METHOD 1631E
Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Total Mercury
CS-A01-0.5 409087-01	<0.07
CS-A02-1 409087-03	0.076
Method Blank i4-737 mb	<0.07

Date of Report: 09/18/24
Date Received: 09/09/24
Project: Maralco, F&BI 409087

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 409135-17 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Antimony	mg/kg (ppm)	20	<1	85	87	75-125	2
Arsenic	mg/kg (ppm)	10	5.80	101 b	91 b	75-125	10 b
Cadmium	mg/kg (ppm)	10	<1	94	95	75-125	1
Chromium	mg/kg (ppm)	50	15.9	72 b	71 b	75-125	1 b
Cobalt	mg/kg (ppm)	20	3.26	74 vo	75	75-125	1
Copper	mg/kg (ppm)	50	6.42	69 vo	70 vo	75-125	1
Lead	mg/kg (ppm)	50	3.92	95	96	75-125	1
Manganese	mg/kg (ppm	20	<1	0 vo	0 vo	75-125	nm
Nickel	mg/kg (ppm)	25	14.8	76 b	74 b	75-125	3 b
Selenium	mg/kg (ppm)	5	<1	87	86	75-125	1
Silver	mg/kg (ppm)	10	<1	95	96	75-125	1
Zinc	mg/kg (ppm)	50	83.5	90 b	77 b	75-125	16 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Antimony	mg/kg (ppm)	20	94	80-120
Arsenic	mg/kg (ppm)	10	90	80-120
Cadmium	mg/kg (ppm)	10	92	80-120
Chromium	mg/kg (ppm)	50	95	80-120
Cobalt	mg/kg (ppm)	20	98	80-120
Copper	mg/kg (ppm)	50	95	80-120
Lead	mg/kg (ppm)	50	94	80-120
Manganese	mg/kg (ppm)	20	95	80-120
Nickel	mg/kg (ppm)	25	99	80-120
Selenium	mg/kg (ppm)	5	90	80-120
Silver	mg/kg (ppm)	10	92	80-120
Zinc	mg/kg (ppm)	50	93	80-120

Date of Report: 09/18/24
Date Received: 09/09/24
Project: Maralco, F&BI 409087

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 409074-01 x10 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Mercury	mg/kg (ppm)	5	<0.025	83	83	71-125	0

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Mercury	mg/kg (ppm)	5	84	68-143

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria, biased low; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the standard reporting limit. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

k – The calibration results for the analyte were outside of acceptance criteria, biased high, and the analyte was not detected in the sample.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

409087

SAMPLE CHAIN OF CUSTODY

09/09/24

Page # 1 of 1

Report To Jones, Hainsworth, Stevens

Company CRETE Consulting

Address

City, State, ZIP

Phone 832.330.1359 Email

SAMPLERS (signature) Rusty Jones R. Jones

PROJECT NAME Maralco

PO # MARALCO

REMARKS Project Metals: Selenium, Alum., Anti, arsenic, Cd, Cr, cobalt, Cu, Fe, Pb, Hg, Manganese, nickel, silver, zinc. Project specific RLs? - Yes / No

INVOICE TO CRETE

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Archive samples
- [ ] Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	*Project Metals*				Notes
CS-A01-0.5	01	9/6/2024	1040	SOIL	1								X				
CS-A01-1	02	"	1045	SOIL	1												HOLD
CS-A02-1	03	"	1055	"	1								X				
CS-A02-2	04	"	1100	"	1												HOLD

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: R. Jones	Rusty Jones	CRETE	9/9/2024	1125
Received by:	Nhan Phan	FEBI	9/9/24	1125
Relinquished by:				
Received by:		Samples received at 4 °C		

Friedman & Bruya, Inc.
Ph. (206) 285-8282

SAMPLE CONDITION UPON RECEIPT CHECKLIST

PROJECT # 409087 CLIENT Crete INITIALS (NP) DATE: 9/9/24

If custody seals are present on cooler, are they intact? ☑ NA ☐ YES ☐ NO

Cooler/Sample temperature 4 °C
Thermometer ID: Fluke 96312917

Were samples received on ice/cold packs? ☑ YES ☐ NO

How did samples arrive?
☑ Over the Counter ☐ Picked up by F&BI ☐ FedEx/UPS/GSO

Is there a Chain-of-Custody* (COC)? ☑ YES ☐ NO Initials/ Date: (NP) 9/9
*or other representative documents, letters, and/or shipping memos

Number of days samples have been sitting prior to receipt at laboratory 3 days

Are the samples clearly identified? (explain "no" answer below) ☑ YES ☐ NO

Were all sample containers received intact (i.e. not broken, leaking etc.)? (explain "no" answer below) ☑ YES ☐ NO

Were appropriate sample containers used? ☑ YES ☐ NO ☐ Unknown

If custody seals are present on samples, are they intact? ☑ NA ☐ YES ☐ NO

Are samples requiring no headspace, headspace free? ☑ NA ☐ YES ☐ NO

Is the following information provided on the COC, and does it match the sample label?
(explain "no" answer below)

Sample ID's	☑ Yes ☐ No	☐ Not on COC/label
Date Sampled	☑ Yes ☐ No	☐ Not on COC/label
Time Sampled	☑ Yes ☐ No	☐ Not on COC/label
# of Containers	☑ Yes ☐ No	
Relinquished	☑ Yes ☐ No	
Requested analysis	☐ Yes ☐ On Hold	

Other comments (use a separate page if needed)

Air Samples: Were any additional canisters/tubes received? ☑ NA ☐ YES ☐ NO

Number of unused TO15 canisters _____ **Number of unused TO17 tubes** _____

3600 Fremont Ave N
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Friedman & Bruya
Michael Erdahl
5500 4th Ave S
Seattle, WA 98108

RE: 409087,
Work Order Number: 2409096

September 13, 2024

Attention Michael Erdahl:

Fremont Analytical, Inc, an Alliance Technical Group company, received 2 sample(s) on 9/10/2024 for the analyses presented in the following report.

Sample Moisture (Percent Moisture)
Total Metals by EPA 6020B

All analyses were performed according to our accredited Quality Assurance program. Please contact the laboratory if you should have any questions about the results.

Please note, while the appearance of our logo and branding will update, our commitment to accuracy, speed, and customer service remain values celebrated and shared by Alliance Technical Group. Thank you for the opportunity to serve you.

Sincerely,

Brianna Barnes
Project Manager

DoD-ELAP Accreditation #79636 by PJLA, ISO/IEC 17025:2017 and QSM 5.4 for Environmental Testing
ORELAP Certification: WA 100009 (NELAP Recognized) for Environmental Testing
Washington State Department of Ecology Accredited for Environmental Testing, Lab ID C910

Original

Date: *09/13/2024*

CLIENT: Friedman & Bruya
Project: 409087
Work Order: 2409096

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2409096-001	CS-A01-0.5	09/06/2024 10:40 AM	09/10/2024 12:21 PM
2409096-002	CS-A02-1	09/06/2024 10:55 AM	09/10/2024 12:21 PM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Original

Case Narrative

WO#: **2409096**

Date: **9/13/2024**

CLIENT: Friedman & Bruya
Project: 409087

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

Analytical Report

Work Order: **2409096**
Date Reported: **9/13/2024**

CLIENT: Friedman & Bruya
Project: 409087

Lab ID: 2409096-001 **Collection Date:** 9/6/2024 10:40:00 AM
Client Sample ID: **CS-A01-0.5** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA 6020B				Batch ID: 45153		Analyst: ME
Aluminum	7,240	46.1		mg/Kg-dry	1	9/11/2024 2:52:00 PM
Iron	7,910	7.49		mg/Kg-dry	1	9/11/2024 2:52:00 PM
Sample Moisture (Percent Moisture)				Batch ID: R94234		Analyst: GG
Percent Moisture	13.9	0.500		wt%	1	9/11/2024 8:50:49 AM

Lab ID: 2409096-002 **Collection Date:** 9/6/2024 10:55:00 AM
Client Sample ID: **CS-A02-1** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA 6020B				Batch ID: 45153		Analyst: ME
Aluminum	16,900	62.6		mg/Kg-dry	1	9/11/2024 2:59:00 PM
Iron	14,500	10.2		mg/Kg-dry	1	9/11/2024 2:59:00 PM
Sample Moisture (Percent Moisture)				Batch ID: R94234		Analyst: GG
Percent Moisture	37.6	0.500		wt%	1	9/11/2024 8:50:49 AM

Work Order: 2409096
CLIENT: Friedman & Bruya
Project: 409087

QC SUMMARY REPORT

Total Metals by EPA 6020B

Sample ID: **MB-45153**	SampType: **MBLK**	Units: **mg/Kg**	Prep Date: **9/11/2024**	RunNo: **94255**
Client ID: **MBLKS**	Batch ID: **45153**		Analysis Date: **9/11/2024**	SeqNo: **1968600**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	40.0									
Iron	ND	6.50									

Sample ID: **LCS-45153**	SampType: **LCS**	Units: **mg/Kg**	Prep Date: **9/11/2024**	RunNo: **94255**
Client ID: **LCSS**	Batch ID: **45153**		Analysis Date: **9/11/2024**	SeqNo: **1968601**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	405	40.0	400.0	0	101	80	120				
Iron	401	6.50	400.0	0	100	80	120				

Sample ID: **2408467-004AMS**	SampType: **MS**	Units: **mg/Kg-dry**	Prep Date: **9/11/2024**	RunNo: **94255**
Client ID: **BATCH**	Batch ID: **45153**		Analysis Date: **9/11/2024**	SeqNo: **1968603**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	7,390	42.5	425.2	8,861	-346	75	125				ES
Iron	8,330	6.91	425.2	9,800	-345	75	125				ES

NOTES:
S - Spiked amount was low relative to sample concentration. Outlying spike recoveries may be expected.

Sample ID: **2408467-004AMSD**	SampType: **MSD**	Units: **mg/Kg-dry**	Prep Date: **9/11/2024**	RunNo: **94255**
Client ID: **BATCH**	Batch ID: **45153**		Analysis Date: **9/11/2024**	SeqNo: **1968604**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	7,050	39.7	397.1	8,861	-457	75	125	7,392	4.79	20	ES
Iron	7,810	6.45	397.1	9,800	-500	75	125	8,332	6.42	20	ES

NOTES:
S - Spiked amount was low relative to sample concentration. Outlying spike recoveries may be expected.

Work Order: 2409096
CLIENT: Friedman & Bruya
Project: 409087

QC SUMMARY REPORT

Total Metals by EPA 6020B

Sample ID: **2408467-004APDS** SampType: **PDS** Units: **mg/Kg-dry** Prep Date: **9/11/2024** RunNo: **94255**
Client ID: **BATCH** Batch ID: **45153** Analysis Date: **9/11/2024** SeqNo: **1968606**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	8,770	45.0	450	8,860	-21.4	75	125				ES
Iron	10,100	7.31	450	9,800	70.9	75	125				ES

NOTES:
S - Spiked amount was low relative to sample concentration. Outlying spike recoveries may be expected.

Sample Log-In Check List

Client Name:	FB	Work Order Number:	2409096
Logged by:	Morgan Wilson	Date Received:	9/10/2024 12:21:00 PM

Chain of Custody

1.	Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2.	How was the sample delivered?	Courier		

Log In

3.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes ☐	No ☐	Not Present ☑
4.	Was an attempt made to cool the samples?	Yes ☐	No ☑	NA ☐
		Unknown prior to receipt.		
5.	Were all items received at a temperature of >2°C to 6°C *	Yes ☐	No ☐	NA ☑
6.	Sample(s) in proper container(s)?	Yes ☑	No ☐	
7.	Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8.	Are samples properly preserved?	Yes ☑	No ☐	
9.	Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10.	Is there headspace in the VOA vials?	Yes ☐	No ☐	NA ☑
11.	Did all samples containers arrive in good condition(unbroken)?	Yes ☑	No ☐	
12.	Does paperwork match bottle labels?	Yes ☑	No ☐	
13.	Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14.	Is it clear what analyses were requested?	Yes ☑	No ☐	
15.	Were all hold times (except field parameters, pH e.g.) able to be met?	Yes ☑	No ☐	

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified:		Date:	
By Whom:		Via:	☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:			
Client Instructions:			

17. Additional remarks:

Item Information

Item #	Temp ºC
Sample	22.0

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2409096

Send Report To Michael Erdahl
Company Friedman and Bruya, Inc.
Address 5500 4th Ave S
City, State, ZIP Seattle, WA 98108
Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER: Alliance Technical Group

PROJECT NAME/NO.	PO #
409087	E-384

REMARKS: EIM

TURNAROUND TIME
☒ Standard TAT
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED: Fe and Al										Notes
CS-A01-0.5		9/6/2024	1040	soil	1	x										
CS-A02-1		9/6/2024	1055	soil	1	x										

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished By:		Michael Erdahl	Friedman & Bruya	9/10/24	0854
Received by:		Briana Ballard	ATG	9/10	12:21 PM
Relinquished by:					
Received by:					