

RESL CUSTOMER EXPORT CONTROL AGREEMENT

It is the Radiological and Environmental Sciences Laboratory's (RESL) policy to conduct business in accordance with all applicable U.S. export control laws and regulations. It is also RESL's policy that its Customers comply with U.S. export control laws and regulations. Therefore, Customer agrees to the following:

1. Because products, technical data, and technical assistance (i.e., services) provided to Customer by RESL may be subject to U.S. export control laws and regulations, (i) transactions with certain persons and companies and (ii) the export or reexport of certain types and levels of products, technical data, and services are prohibited or restricted.
2. Customer acknowledges that it is responsible for its own compliance with U.S. export control laws and regulations. Customer further agrees that it assumes the responsibility to obtain all necessary U.S. export licenses or other U.S. governmental authorizations, as well as all liability for the failure to do so.
3. Customer acknowledges that export control requirements may change and that the export or reexport of RESL products, technical data, and services without an export license or other appropriate governmental authorization may result in criminal and/or civil liability.
4. The obligations and requirements described herein shall survive the expiration or termination of any agreement or contract between RESL and Customer.

XaW37 Participating Laboratories

Lab Code	Lab Name	Matrix Code
ANTE01	ALS Environmental - Fort Collins, CO	XaW
ARSL01	ARS International, LLC	XaW
AY1201	Consolidated Nuclear Security, LLC, Analytical Chemistry Organization Laboratory	XaW
CDHS01	California Department of Public Health	XaW
CHMH01	222-S Laboratory	XaW
ERCL01	Washington State Public Health Laboratories	XaW
EULC01	EnergySolutions, LLC	XaW
FDHE01	Florida Dept of Health Environmental Laboratory	XaW
FDOH01	Florida Dept. of Health, Mobile Environmental Radiological Lab	XaW
GENE01	GEL Laboratories, LLC	XaW
NARL01	National Analytical Radiation Environmental Laboratory	XaW
NARL02	USEPA - NAREL - MERL	XaW
ORIS01	ORISE/IEAV	XaW
QUAN01	TestAmerica St. Louis	XaW
QUAN03	TestAmerica Laboratories - Richland	XaW
SAVA01	SAVANNAH RIVER NUCLEAR SOLUTIONS (SRNS)	XaW
SEML01	SRS Environmental Monitoring Laboratory	XaW
SOUT01	Southwest Research Institute	XaW
TELE02	ATI Environmental, Inc., Midwest Lab	XaW
TMAO01	EBERLINE SERVICES OAK RIDGE LABORATORY	XaW
WSHL01	Wisconsin State Laboratory of Hygiene	XaW

Laboratories Not Reporting

Lab Code	Lab Name	Matrix Code
MNDH01	Minnesota Department of Health, Public Health Lab. Division	XaW
NESI01	BWXT-Radioisotope & Analytical Chemistry Laboratory	XaW

Study Reference Values

MAPEP-17-XaW37

Radiological Reference Date: 08/01/2017

Analyte	Ref Value	Ref Unc
Radiological		Units: (Bq/L)
Iodine-129	2.31	0.05

Sample Statistical Summary

MAPEP-17-XaW37

Radiological Reference Date: 08/01/2017

Analyte	T(1)	A(2)	Grand(3) Mean	Std Dev	Ref Value	Ref Unc	Acceptance Range
Radiological							Units: (Bq/L)
Iodine-129	21	18	2.44	0.20	2.31	0.05	1.62 - 3.00

Note: (1) T = Total number of laboratories reporting analyte.
(2) A = Number of laboratories with 'Acceptable' performance.
(3) Mean excludes values indicated as "Not Acceptable".

Result Flags:

A = Result acceptable Bias $\leq 20\%$
 W = Result acceptable with warning $20\% < \text{Bias} < 30\%$
 N = Result not acceptable Bias $> 30\%$
 RW = Report Warning
 NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP $< 2\%$
 ACCEPTABLE..... $2\% \leq \text{RP} \leq 15\%$
 ACCEPTABLE WITH WARNING..... $15\% < \text{RP} \leq 30\%$
 NOT ACCEPTABLE.....RP $> 30\%$
 RP = Relative Precision

Flag Summary Report

MAPEP-17-XaW37

Radiological

Analyte	A	W	RW	N
Iodine-129	17	1		3



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-17-XaW37
 (ANTE01) ALS Environmental - Fort Collins, CO
 225 Commerce Drive
 Fort Collins, CO 80524-1416

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	2.27	2.31	A		-1.7	1.62 - 3.00	0.92	N

Radiological Reference Date: August 1, 2017

Result Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

ACCEPTABLE WITH WARNING.....15%<RP<=30%

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-17-XaW37

(ARSL01) ARS International, LLC

2609 North River Road

Port Allen, LA 70767

Radiological Units: (Bq/L)

Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	3.408	2.31	N		47.5	1.62 - 3.00	1.143	N

Radiological Reference Date: August 1, 2017

Result Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

ACCEPTABLE WITH WARNING.....15%<RP<=30%

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-17-XaW37

(AY1201) Consolidated Nuclear Security, LLC, Analytical Chemistry Organization Laboratory
 Y12, NSC, Bldg. 9995, Rm 142
 Oak Ridge, TN 37831-8189

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	3.15	2.31	N		36.4	1.62 - 3.00	1.1	N

Radiological Reference Date: August 1, 2017

Result Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

ACCEPTABLE WITH WARNING.....15%<RP<=30%

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-17-XaW37
 (CDHS01) California Department of Public Health
 Drinking Water & Radiation Lab.
 Richmond, CA 94804-6403

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	2.61	2.31	A		13.0	1.62 - 3.00	0.14	A

Radiological Reference Date: August 1, 2017

Result Flags:

- A = Result acceptable Bias <=20%
- W = Result acceptable with warning 20% < Bias < 30%
- N = Result not acceptable Bias > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP<2%
 - ACCEPTABLE.....2%<=RP<=15%
 - ACCEPTABLE WITH WARNING.....15%<RP<=30%
 - NOT ACCEPTABLE.....RP>30%
- RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-17-XaW37
 (CHMH01) 222-S Laboratory
 1955 Jadwin Ave Suite 330
 Richland, WA 99354

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	2.95	2.31	W		27.7	1.62 - 3.00	.316	A

Radiological Reference Date: August 1, 2017

Result Flags:

A = Result acceptable Bias $\leq 20\%$

W = Result acceptable with warning $20\% < \text{Bias} < 30\%$

N = Result not acceptable Bias $> 30\%$

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP $< 2\%$

ACCEPTABLE..... $2\% \leq \text{RP} \leq 15\%$

ACCEPTABLE WITH WARNING..... $15\% < \text{RP} \leq 30\%$

NOT ACCEPTABLE.....RP $> 30\%$

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-17-XaW37
 (ERCL01) Washington State Public Health Laboratories
 1610 N.E. 150th Street
 Shoreline, WA 98155-9701

Radiological Units: (Bq/L)

Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	2.40	2.31	A		3.9	1.62 - 3.00	0.06	A

Radiological Reference Date: August 1, 2017

Result Flags:

A = Result acceptable Bias $\leq 20\%$

W = Result acceptable with warning $20\% < \text{Bias} < 30\%$

N = Result not acceptable Bias $> 30\%$

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP $< 2\%$

ACCEPTABLE..... $2\% \leq \text{RP} \leq 15\%$

ACCEPTABLE WITH WARNING..... $15\% < \text{RP} \leq 30\%$

NOT ACCEPTABLE.....RP $> 30\%$

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-17-XaW37

(EULC01) EnergySolutions, LLC

I-80, Exit 49

Clive, UT 84029

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	2.564	2.31	A		11.0	1.62 - 3.00	.544	W

Radiological Reference Date: August 1, 2017

Result Flags:

A = Result acceptable Bias $\leq 20\%$

W = Result acceptable with warning $20\% < \text{Bias} < 30\%$

N = Result not acceptable Bias $> 30\%$

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP $< 2\%$

ACCEPTABLE..... $2\% \leq \text{RP} \leq 15\%$

ACCEPTABLE WITH WARNING..... $15\% < \text{RP} \leq 30\%$

NOT ACCEPTABLE.....RP $> 30\%$

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-17-XaW37
 (FDHE01) Florida Dept of Health Environmental Laboratory
 PO Box 680069
 Orlando, FL 32868-0069

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	2.138	2.31	A		-7.4	1.62 - 3.00	0.140	A

Radiological Reference Date: August 1, 2017

Result Flags:

- A = Result acceptable Bias $\leq 20\%$
- W = Result acceptable with warning $20\% < \text{Bias} < 30\%$
- N = Result not acceptable Bias $> 30\%$
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP $< 2\%$
 - ACCEPTABLE..... $2\% \leq \text{RP} \leq 15\%$
 - ACCEPTABLE WITH WARNING..... $15\% < \text{RP} \leq 30\%$
 - NOT ACCEPTABLE.....RP $> 30\%$
- RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-17-XaW37

(FDOH01) Florida Dept. of Health, Mobile Environmental Radiological Lab
 PO Box 680069
 Orlando, FL 32868-0069

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	2.165	2.31	A		-6.3	1.62 - 3.00	0.140	A

Radiological Reference Date: August 1, 2017

Result Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

ACCEPTABLE WITH WARNING.....15%<RP<=30%

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-17-XaW37
 (GENE01) GEL Laboratories, LLC
 2040 Savage Road
 Charleston, SC 29407

Radiological Units: (Bq/L)

Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	2.59	2.31	A		12.1	1.62 - 3.00	0.151	A

Radiological Reference Date: August 1, 2017

Result Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

ACCEPTABLE WITH WARNING.....15%<RP<=30%

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-17-XaW37
 (NARL01) National Analytical Radiation Environmental Laboratory
 540 S. Morris Ave.
 Montgomery, AL 36115-2601

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	2.64	2.31	A		14.3	1.62 - 3.00	0.379	A

Radiological Reference Date: August 1, 2017

Result Flags:

- A = Result acceptable Bias <=20%
- W = Result acceptable with warning 20% < Bias < 30%
- N = Result not acceptable Bias > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP<2%
 - ACCEPTABLE.....2%<=RP<=15%
 - ACCEPTABLE WITH WARNING.....15%<RP<=30%
 - NOT ACCEPTABLE.....RP>30%
- RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-17-XaW37
 (NARL02) USEPA - NAREL - MERL
 540 S Morris Ave
 Montgomery, AL 36115

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	2.47	2.31	A		6.9	1.62 - 3.00	0.135	A

Radiological Reference Date: August 1, 2017

Result Flags:

- A = Result acceptable Bias <=20%
- W = Result acceptable with warning 20% < Bias < 30%
- N = Result not acceptable Bias > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP<2%
 - ACCEPTABLE.....2%<=RP<=15%
 - ACCEPTABLE WITH WARNING.....15%<RP<=30%
 - NOT ACCEPTABLE.....RP>30%
- RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-17-XaW37
 (ORIS01) ORISE/IEAV
 PO Box 117
 Oak Ridge, TN 37831-0117

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	2.48	2.31	A		7.4	1.62 - 3.00	0.30	A

Radiological Reference Date: August 1, 2017

Result Flags:

A = Result acceptable Bias $\leq 20\%$

W = Result acceptable with warning $20\% < \text{Bias} < 30\%$

N = Result not acceptable Bias $> 30\%$

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP $< 2\%$

ACCEPTABLE..... $2\% \leq \text{RP} \leq 15\%$

ACCEPTABLE WITH WARNING..... $15\% < \text{RP} \leq 30\%$

NOT ACCEPTABLE.....RP $> 30\%$

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-17-XaW37

(QUAN01) TestAmerica St. Louis
 13715 Rider Trail North
 Earth City, MO 63045-1205

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	2.20	2.31	A		-4.8	1.62 - 3.00	0.108	A

Radiological Reference Date: August 1, 2017

Result Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

ACCEPTABLE WITH WARNING.....15%<RP<=30%

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-17-XaW37
 (QUAN03) TestAmerica Laboratories - Richland
 2800 GEORGE WASHINGTON WAY
 RICHLAND, WA 99354-

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	2.53	2.31	A		9.5	1.62 - 3.00	0.15	A

Radiological Reference Date: August 1, 2017

Result Flags:

- A = Result acceptable Bias <=20%
- W = Result acceptable with warning 20% < Bias < 30%
- N = Result not acceptable Bias > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP<2%
 - ACCEPTABLE.....2%<=RP<=15%
 - ACCEPTABLE WITH WARNING.....15%<RP<=30%
 - NOT ACCEPTABLE.....RP>30%
- RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-17-XaW37
 (SAVA01) SAVANNAH RIVER NUCLEAR SOLUTIONS (SRNS)
 SRNL (non-purchased material receipt)
 AIKEN, SC 29808-0000

Radiological Units: (Bq/L)

Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	2.54	2.31	A		10.0	1.62 - 3.00	0.384	W

Radiological Reference Date: August 1, 2017

Result Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

ACCEPTABLE WITH WARNING.....15%<RP<=30%

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-17-XaW37
 (SEML01) SRS Environmental Monitoring Laboratory
 Bldg 735-B
 Aiken, SC 29808

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	2.47	2.31	A		6.9	1.62 - 3.00	0.51	W

Radiological Reference Date: August 1, 2017

Result Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

ACCEPTABLE WITH WARNING.....15%<RP<=30%

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-17-XaW37
 (SOUT01) Southwest Research Institute
 6220 Culebra Rd.
 San Antonio, TX 78228-0510

Radiological Units: (Bq/L)

Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	2.28	2.31	A		-1.3	1.62 - 3.00	0.111	A

Radiological Reference Date: August 1, 2017

Result Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

ACCEPTABLE WITH WARNING.....15%<RP<=30%

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-17-XaW37
 (TELE02) ATI Environmental, Inc., Midwest Lab
 700 Landwehr Road
 Northbrook, IL 60062-

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	2.31	2.31	A		0.0	1.62 - 3.00	0.10	A

Radiological Reference Date: August 1, 2017

Result Flags:

- A = Result acceptable Bias $\leq 20\%$
- W = Result acceptable with warning $20\% < \text{Bias} < 30\%$
- N = Result not acceptable Bias $> 30\%$
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP $< 2\%$
 - ACCEPTABLE..... $2\% \leq \text{RP} \leq 15\%$
 - ACCEPTABLE WITH WARNING..... $15\% < \text{RP} \leq 30\%$
 - NOT ACCEPTABLE.....RP $> 30\%$
- RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-17-XaW37
 (TMAO01) EBERLINE SERVICES OAK RIDGE LABORATORY
 601 SCARBORO RD
 OAK RIDGE, TN 37830-

Radiological Units: (Bq/L)

Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	2.317	2.31	A		0.3	1.62 - 3.00	0.269	A

Radiological Reference Date: August 1, 2017

Result Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

ACCEPTABLE WITH WARNING.....15%<RP<=30%

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-17-XaW37
 (WSHL01) Wisconsin State Laboratory of Hygiene
 2601 Agriculture Drive
 Madison, WI 53718

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	1.53	2.31	N		-33.8	1.62 - 3.00	.007	N

Radiological Reference Date: August 1, 2017

Result Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

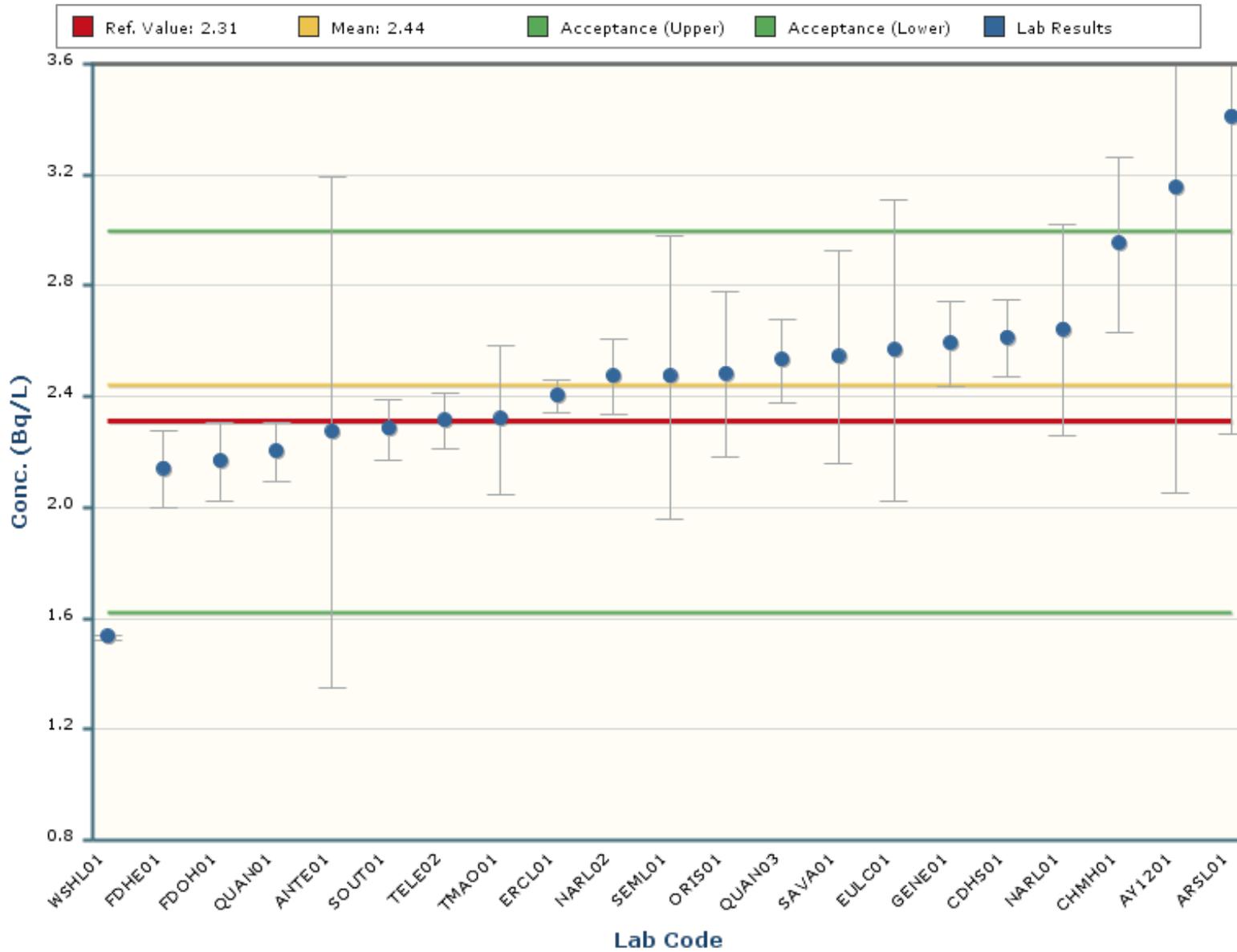
ACCEPTABLE WITH WARNING.....15%<RP<=30%

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Iodine-129

MAPEP-17-XaW37



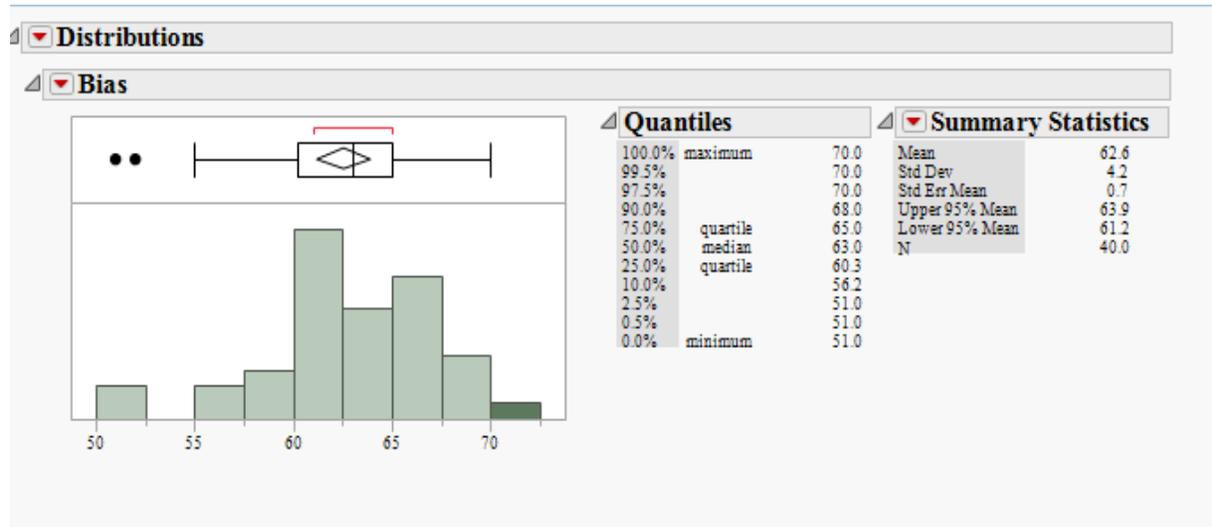
Notes:

The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 1.42 and 3.46 (± 5 Standard Deviations).

The error bars encompassing each result are plotted at \pm one standard deviation.

The intent of the distribution graphs contained within this report is to graphically demonstrate to users how % Bias data within the current MAPEP Series appears when examined by matrix, by analyte, by method of sample preparation or by method of detection. Biases greater than +/- 100% have been screened from the data. The box plot of the bias data points and the mean visually illustrate the breadth of the distribution and where potential outliers in the distribution might lie. The statistics for the distribution plot are provided adjacent to the Bias plot. In some cases, N becomes very small and thus developed statistics may not accurately reflect estimates of the population if N were a significantly larger value.

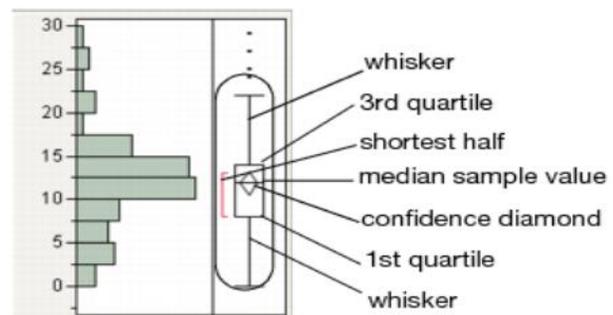


Outlier Box Plot

The BLACK small vertical line inside the small rectangle at the top of the data distribution graph is the median of the population of the bias shown for that analyte in the matrix. The confidence diamond contains the mean and the upper and lower 95% of the mean. If you drew a line through the middle of the diamond, you would have the mean. The top and bottom points of the diamond represent the upper and lower 95% of the mean. The ends of the box represent the 25th and 75th quantiles, also expressed as 1st and 3rd quartile. The difference between the 1st and 3rd quartiles is called the interquartile range. Each box has lines that extend from each end, sometimes called whiskers. The whiskers extend from the ends of the box to the outermost data point that falls within the distances computed as follows:

3rd quartile + 1.5*(interquartile range)

1st quartile - 1.5*(interquartile range)



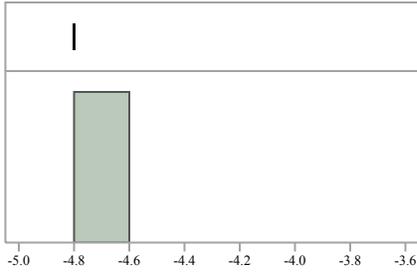
If the data points do not reach the computed ranges, then the whiskers are determined by the upper and lower data point values (not including outliers). The bracket outside of the box identifies the *shortest half*, which is the most dense 50% of the observations (Rousseuw and Leroy 1987).

XaW37 Distribution by Preparation Method

XaW Distribution by Prep Method

Distributions Analyte_Method=Iodine-129 Evaporation, acidified

Bias

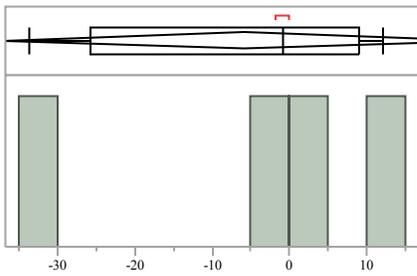


Quantiles		
100.0%	maximum	-4.8
99.5%		-4.8
97.5%		-4.8
90.0%		-4.8
75.0%	quartile	-4.8
50.0%	median	-4.8
25.0%	quartile	-4.8
10.0%		-4.8
2.5%		-4.8
0.5%		-4.8
0.0%	minimum	-4.8

Summary Statistics	
Mean	-4.8
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

Distributions Analyte_Method=Iodine-129 Ion Exchange Chromatography / Ion Chromatography

Bias

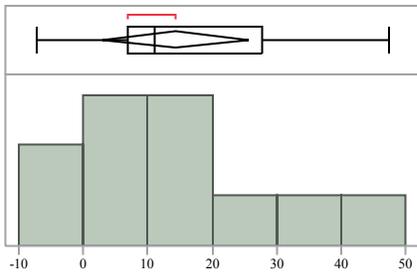


Quantiles		
100.0%	maximum	12.1
99.5%		12.1
97.5%		12.1
90.0%		12.1
75.0%	quartile	9.1
50.0%	median	-0.9
25.0%	quartile	-25.8
10.0%		-33.8
2.5%		-33.8
0.5%		-33.8
0.0%	minimum	-33.8

Summary Statistics	
Mean	-5.9
Std Dev	19.6
Std Err Mean	9.8
Upper 95% Mean	25.4
Lower 95% Mean	-37.1
N	4.0

Distributions Analyte_Method=Iodine-129 No preparation - analyzed as received

Bias

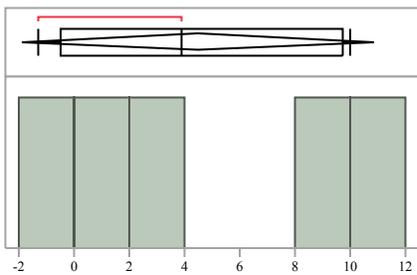


Quantiles		
100.0%	maximum	47.5
99.5%		47.5
97.5%		47.5
90.0%		45.3
75.0%	quartile	27.7
50.0%	median	11.0
25.0%	quartile	6.9
10.0%		-7.2
2.5%		-7.4
0.5%		-7.4
0.0%	minimum	-7.4

Summary Statistics	
Mean	14.3
Std Dev	16.8
Std Err Mean	5.1
Upper 95% Mean	25.6
Lower 95% Mean	3.0
N	11.0

Distributions Analyte_Method=Iodine-129 Other

Bias



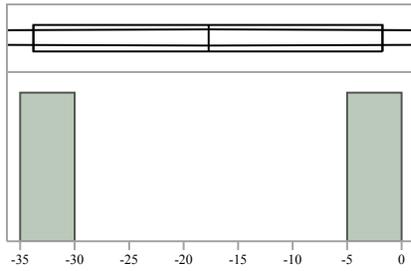
Quantiles		
100.0%	maximum	10.0
99.5%		10.0
97.5%		10.0
90.0%		10.0
75.0%	quartile	9.8
50.0%	median	3.9
25.0%	quartile	-0.5
10.0%		-1.3
2.5%		-1.3
0.5%		-1.3
0.0%	minimum	-1.3

Summary Statistics	
Mean	4.5
Std Dev	5.2
Std Err Mean	2.3
Upper 95% Mean	10.9
Lower 95% Mean	-1.9
N	5.0

XaW Distribution by Detection Method

Distributions Analyte_Detection=Iodine-129 Beta Counting - 2 pi gas flow proportional counter

Bias

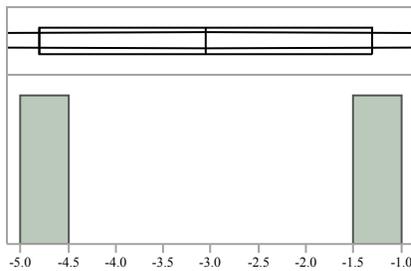


Quantiles		
100.0%	maximum	-1.7
99.5%		-1.7
97.5%		-1.7
90.0%		-1.7
75.0%	quartile	-1.7
50.0%	median	-17.8
25.0%	quartile	-33.8
10.0%		-33.8
2.5%		-33.8
0.5%		-33.8
0.0%	minimum	-33.8

Summary Statistics		
Mean		-17.8
Std Dev		22.7
Std Err Mean		16.1
Upper 95% Mean		186.2
Lower 95% Mean		-221.7
N		2.0

Distributions Analyte_Detection=Iodine-129 Beta Counting - liquid scintillation counter

Bias

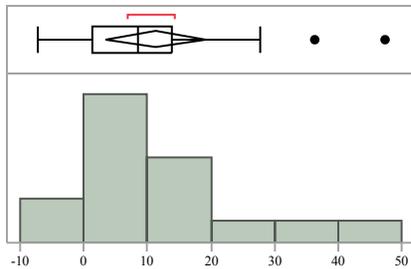


Quantiles		
100.0%	maximum	-1.3
99.5%		-1.3
97.5%		-1.3
90.0%		-1.3
75.0%	quartile	-1.3
50.0%	median	-3.1
25.0%	quartile	-4.8
10.0%		-4.8
2.5%		-4.8
0.5%		-4.8
0.0%	minimum	-4.8

Summary Statistics		
Mean		-3.1
Std Dev		2.5
Std Err Mean		1.8
Upper 95% Mean		19.2
Lower 95% Mean		-25.3
N		2.0

Distributions Analyte_Detection=Iodine-129 Gamma Spectrometry

Bias

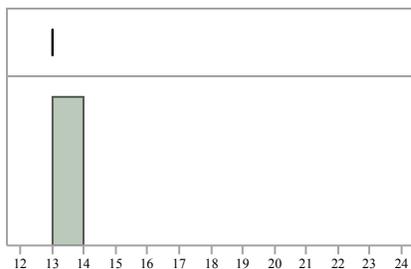


Quantiles		
100.0%	maximum	47.5
99.5%		47.5
97.5%		47.5
90.0%		39.7
75.0%	quartile	13.8
50.0%	median	8.5
25.0%	quartile	1.2
10.0%		-6.6
2.5%		-7.4
0.5%		-7.4
0.0%	minimum	-7.4

Summary Statistics		
Mean		11.3
Std Dev		14.7
Std Err Mean		3.7
Upper 95% Mean		19.1
Lower 95% Mean		3.4
N		16.0

Distributions Analyte_Detection=Iodine-129 Inductively Coupled Plasma Mass Spectrometry

Bias



Quantiles		
100.0%	maximum	13.0
99.5%		13.0
97.5%		13.0
90.0%		13.0
75.0%	quartile	13.0
50.0%	median	13.0
25.0%	quartile	13.0
10.0%		13.0
2.5%		13.0
0.5%		13.0
0.0%	minimum	13.0

Summary Statistics		
Mean		13.0
Std Dev		.
Std Err Mean		.
Upper 95% Mean		.
Lower 95% Mean		.
N		1.0