

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.

GrW33 Participating Laboratories

Lab Code	Lab Name	Matrix Code
ADEM01	Alabama Department of Environmental Management	GrW
ADFC99	Abu Dhabi Quality and Conformity Council-Central Testing Lab	GrW
AFOH01	USAFSAM/OEA	GrW
ANTE01	ALS Environmental - Fort Collins, CO	GrW
ARGO01	Idaho National Laboratory	GrW
ARPL01	Analytical Support Operations - Radiochemical Processing Lab	GrW
ARSL01	ARS International, LLC	GrW
ASUK99	NAS Radiochemistry Group	GrW
AY1201	Consolidated Nuclear Security, LLC, Analytical Chemistry Organization Laboratory	GrW
CDHS01	California Department of Public Health	GrW
CESL01	Lawrence Livermore National Laboratory - EMRL	GrW
CHMH01	222-S Laboratory	GrW
CMRC01	Carlsbad Environmental Monitoring and Research Center	GrW
CRCE99	Centre for Radiation, Chemical and Environmental Hazards	GrW
DEHS01	Department of Environmental Health & Safety	GrW
DLEA01	DLE Associates	GrW
DPHE01	Colorado Dept. of Public Health & Env. / Laboratory Services Div.	GrW
ELCS01	Energy Labs - College Station	GrW
ELIW01	Energy Laboratories, Inc.	GrW
ERCL01	Washington State Public Health Laboratories	GrW
ERHD99	Radiation Protection Bureau RSD NMS	GrW
ESGL99	Environmental Scientifics Group	GrW
FDHE01	Florida Dept of Health Environmental Laboratory	GrW
GENE01	GEL Laboratories, LLC	GrW
GROW01	FGL Environmental	GrW
HCAL01	Lawrence Livermore National Laboratory	GrW
HECR01	SC Dept. Health and Environmental Control Radiological Laboratory	GrW
HPAC99	PHE, CRCE Glasgow	GrW
ISUE01	ISU Environmental Monitoring Laboratory	GrW
ISUP01	ISU - Department of Physics/Health Physics/EAL	GrW
JAEC99	Research Laboratories and Information Directorate	GrW
LAWR01	LAWRENCE BERKELEY NATIONAL LABORATORY	GrW
LERL99	LARUEX Environmental Radioactivity Laboratory	GrW
LGCL99	LGC Ltd	GrW
LOCK03	Advanced Test Reactor (ATR) Complex Radioanalytical Laboratory	GrW
MAHP59	Materials Assessment and Health Physics Group	GrW
MART01	Fluor B&W Ports Analytical Laboratory	GrW
MART03	Radioactive Material Analysis Laboratory	GrW
NARL01	National Analytical Radiation Environmental Laboratory	GrW
NESI01	B&W Technical Services-Radioisotope & Analytical Chemistry Laboratory	GrW
NJDH01	New Jersey Dept. of Health, PHEL, ECLS	GrW
NOCS99	National Oceanography Centre, Southampton	GrW
NRL99	Environmental Radioactivity - National Centre for Radiation Science	GrW
ODHL01	Ohio Department of Health Laboratory	GrW
ORIS01	ORISE/IEAV	GrW
OTLI01	Outreach Laboratory, a Division of ESC Lab Sciences	GrW
QUAN01	TestAmerica St. Louis	GrW
QUAN03	TestAmerica Laboratories - Richland	GrW
RAVR99	Radiactividad Ambiental y Vigilancia Radiologica	GrW

RPSC01	Radiation Protection Service	GrW
SANC99	RadioAnalysis, South Africa Nuclear Energy Corp.	GrW
SEML01	SRS Environmental Monitoring Laboratory	GrW
SNRC99	Soreq NRC	GrW
SOUT01	Southwest Research Institute	GrW
TDHL01	Texas Department of State Health Services Laboratory	GrW
TELE02	ATI Environmental, Inc., Midwest Lab	GrW
TMAO01	EBERLINE SERVICES OAK RIDGE LABORATORY	GrW
TNUT01	St. Louis USACE FUSRAP Laboratory	GrW
ULFM99	University of La Laguna FISICA Medica	GrW
USED99	National Center for Nuclear Energy, Sciences and Techniques	GrW
WEST04	PACE ANALYTICAL SERVICES, PITTSBURGH	GrW
WSHL01	Wisconsin State Laboratory of Hygiene	GrW
WVDP01	WVDP Environmental Laboratory	GrW
ZIOS99	ZVD Institute of Occupational Safety	GrW

Laboratories Not Reporting GrW33

Lab Code	Lab Name	Matrix Code
AREV01	AREVA - CMC	GrW
DRMG01	CNS Pantex - D&RMG	GrW
KDHE01	Kansas Dept. of Health & Environment	GrW
LZCA01	ACZ Laboratories, Inc	GrW
MDPH01	MDPH-Radiation Control Program	GrW
RMCL99	Royal Scientific Society - Radiation Protection Lab	GrW
RSAL01	RSA Laboratories, Inc.	GrW

Study Reference Values

MAPEP-15-GrW33

Radiological Reference Date: 08/01/2015

Analyte	Ref Value	Ref Unc
Radiological	Units: (Bq/L)	
Gross alpha	0.429	0.007
Gross beta	3.52	0.16

Sample Statistical Summary

MAPEP-15-GrW33

Radiological Reference Date: 08/01/2015

Analyte	T(1)	A(2)	Grand(3) Mean	Std Dev	Ref Value	Ref Unc	Acceptance Range
Radiological							Units: (Bq/L)
Gross alpha	63	58	0.434	0.130	0.429	0.007	0.129 - 0.729
Gross beta	64	64	3.61	0.43	3.52	0.16	1.76 - 5.28

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

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2%<=RP<=15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP<=30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Flag Summary Report

MAPEP-15-GrW33

Radiological

<u>Analyte</u>	<u>A</u>	<u>W</u>	<u>RW</u>	<u>N</u>
Gross alpha	58			5
Gross beta	64			



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

Laboratory Results For MAPEP-15-GrW33
 (ADEM01) Alabama Department of Environmental Management
 Montgomery Laboratory
 Montgomery, AL 36110

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.396	0.429	A		-7.7	0.129 - 0.729	0.007	N
Gross beta	4.94	3.52	A		40.3	1.76 - 5.28	0.01	N

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (ADFC99) Abu Dhabi Quality and Conformity Council-Central Testing Lab
 Radiation Lab
 Abu Dhabi, - -

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.61	0.429	A		42.2	0.129 - 0.729	0.28	N
Gross beta	3.82	3.52	A		8.5	1.76 - 5.28	0.97	W

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (AFOH01) USAFSAM/OEA
 2510 Fifth Street, Area B
 Wright-Patterson AFB, OH 45433-7913

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.71	0.429	A		65.5	0.129 - 0.729	0.09	A
Gross beta	3.33	3.52	A		-5.4	1.76 - 5.28	0.1	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (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
Gross alpha	0.629	0.429	A		46.6	0.129 - 0.729	0.057	A
Gross beta	3.49	3.52	A		-0.9	1.76 - 5.28	0.28	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33

(ARGO01) Idaho National Laboratory

INL, Materials and Fuels Complex

Idaho Falls, ID 83415

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.47	0.429	A		9.6	0.129 - 0.729	0.47	N
Gross beta	2.58	3.52	A		-26.7	1.76 - 5.28	0.23	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33

(ARPL01) Analytical Support Operations - Radiochemical Processing Lab

PO Box 999

Richland, WA 99354

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.436	0.429	A		1.6	0.129 - 0.729	0.078	W
Gross beta	3.65	3.52	A		3.7	1.76 - 5.28	0.152	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33

(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
Gross alpha	0.406	0.429	A		-5.4	0.129 - 0.729	0.105	W
Gross beta	3.49	3.52	A		-0.9	1.76 - 5.28	0.817	W

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (ASUK99) NAS Radiochemistry Group
 A38.1 AWE,
 Reading, Berkshire RG7 4PR

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.1645	0.429	A		-61.7	0.129 - 0.729	0.0147	A
Gross beta	4.104	3.52	A		16.6	1.76 - 5.28	0.122	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33

(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
Gross alpha	0.540	0.429	A		25.9	0.129 - 0.729	0.16	W
Gross beta	3.67	3.52	A		4.3	1.76 - 5.28	0.27	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (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
Gross alpha	0.452	0.429	A		5.4	0.129 - 0.729	0.0610	A
Gross beta	3.64	3.52	A		3.4	1.76 - 5.28	0.0929	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (CESL01) Lawrence Livermore National Laboratory - EMRL
 7000 East Avenue
 Livermore, CA 94551

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	3.78E-01	0.429	A		-11.9	0.129 - 0.729	1.45E-01	N
Gross beta	3.91E+00	3.52	A		11.1	1.76 - 5.28	6.43E-01	W

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (CHMH01) 222-S Laboratory
 2355 Stevens Drive
 Richland, WA 99354

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	4.954E-01	0.429	A		15.5	0.129 - 0.729	1.76E-01	N
Gross beta	3.628E+00	3.52	A		3.1	1.76 - 5.28	3.36E-01	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (CMRC01) Carlsbad Environmental Monitoring and Research Center
 1400 University Dr.
 Carlsbad, NM 88220

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.1467	0.429	A		-65.8	0.129 - 0.729	0.0388	W
Gross beta	3.69	3.52	A		4.8	1.76 - 5.28	0.32	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (CRCE99) Centre for Radiation, Chemical and Environmental Hazards
 Public Health England
 Didcot, OXON OX11 0RQ

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.29	0.429	A		-32.4	0.129 - 0.729	0.03	A
Gross beta	3.73	3.52	A		6.0	1.76 - 5.28	0.6	W

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (DEHS01) Department of Environmental Health & Safety
 North Carolina State Univ.
 Raleigh, NC 27695-8007

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.57	0.429	A		32.9	0.129 - 0.729	0.18	N
Gross beta	3.23	3.52	A		-8.2	1.76 - 5.28	0.28	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33

(DLEA01) DLE Associates
 730 Alfred Nobel Drive
 Hercules, CA 94547

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.55	0.429	A		28.2	0.129 - 0.729	0.10	W
Gross beta	3.36	3.52	A		-4.5	1.76 - 5.28	0.34	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33

(DPHE01) Colorado Dept. of Public Health & Env. / Laboratory Services Div.

8100 Lowry Blvd
Denver, CO 80230

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.75	0.429	N		74.8	0.129 - 0.729	0.18	W
Gross beta	4.13	3.52	A		17.3	1.76 - 5.28	0.24	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (ELCS01) Energy Labs - College Station
 415 Graham RD
 College Station, Tx 77845

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.377	0.429	A		-12.1	0.129 - 0.729	0.061	W
Gross beta	3.41	3.52	A		-3.1	1.76 - 5.28	0.14	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33

(ELIW01) Energy Laboratories, Inc.

2393 Salt Creek HWY

Casper, Wy 82601

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.4	0.429	A		-6.8	0.129 - 0.729	0.1	W
Gross beta	3.6	3.52	A		2.3	1.76 - 5.28	0.4	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (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
Gross alpha	.755	0.429	N		76.0	0.129 - 0.729	.091	A
Gross beta	3.77	3.52	A		7.1	1.76 - 5.28	.13	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (ERHD99) Radiation Protection Bureau RSD NMS
 775 Brookfield Road AL6302D1
 Ottawa, Ontario K1A 1C1

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.385	0.429	A		-10.3	0.129 - 0.729	0.082	W
Gross beta	3.61	3.52	A		2.6	1.76 - 5.28	0.06	N

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (ESGL99) Environmental Scientifics Group
 Unit 12 Moorbrook
 Didcot, Oxfordshire OX11 8QT

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.417	0.429	A		-2.8	0.129 - 0.729	0.044	A
Gross beta	4.22	3.52	A		19.9	1.76 - 5.28	0.32	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (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
Gross alpha	0.52	0.429	A		21.2	0.129 - 0.729	0.08	W
Gross beta	3.74	3.52	A		6.3	1.76 - 5.28	0.12	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33

(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
Gross alpha	0.425	0.429	A		-0.9	0.129 - 0.729	0.0653	W
Gross beta	3.59	3.52	A		2.0	1.76 - 5.28	0.216	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33

(GROW01) FGL Environmental

853 Corporation St.

Santa Paula, CA 93060

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	1.3	0.429	N		203.0	0.129 - 0.729	0.1	A
Gross beta	3.34	3.52	A		-5.1	1.76 - 5.28	0.4	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (HCAL01) Lawrence Livermore National Laboratory
 Hazard Control Analytical Lab
 Livermore, CA 94550

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.44	0.429	A		2.6	0.129 - 0.729	0.05	A
Gross beta	3.27	3.52	A		-7.1	1.76 - 5.28	0.17	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33

(HECR01) SC Dept. Health and Environmental Control Radiological Laboratory
 8231 Parklane Road
 Columbia, SC 29223

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.609	0.429	A		42.0	0.129 - 0.729	0.184	N
Gross beta	3.50	3.52	A		-0.6	1.76 - 5.28	0.21	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33

(HPAC99) PHE, CRCE Glasgow

155 Hardgate Road

Glasgow, Scotland G514LS

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.304	0.429	A		-29.1	0.129 - 0.729	0.042	A
Gross beta	3.30	3.52	A		-6.3	1.76 - 5.28	0.20	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (ISUE01) ISU Environmental Monitoring Laboratory
 785 5th 8th Ave Rm B107
 Pocatello, Idaho 83209

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.27	0.429	A		-37.1	0.129 - 0.729	0.02	A
Gross beta	4.04	3.52	A		14.8	1.76 - 5.28	0.05	N

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (ISUP01) ISU - Department of Physics/Health Physics/EAL
 785 S. 8th Ave, Rm 120
 Pocatello, ID 83209-8106

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.20	0.429	A		-53.4	0.129 - 0.729	0.06	W
Gross beta	3.56	3.52	A		1.1	1.76 - 5.28	0.14	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (JAEC99) Research Laboratories and Information Directorate
 Jordan Atomic Energy Commission
 Amman, Jordan 70 (11934)

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.413	0.429	A		-3.7	0.129 - 0.729	0.045	A
Gross beta	4.155	3.52	A		18.0	1.76 - 5.28	0.028	N

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (LAWR01) LAWRENCE BERKELEY NATIONAL LABORATORY
 1 CYCLOTRON RD.
 BERKELEY, CA 94720

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	.734	0.429	N		71.1	0.129 - 0.729	.172	W
Gross beta	3.34	3.52	A		-5.1	1.76 - 5.28	.113	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (LERL99) LARUEX Environmental Radioactivity Laboratory
 Dpt. Applied Physics, Faculty of Vet. Sciences
 Caceres, Caceres 10003

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.35	0.429	A		-18.4	0.129 - 0.729	0.05	A
Gross beta	3.52	3.52	A		0.0	1.76 - 5.28	0.21	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33

(LGCL99) LGC Ltd

Queens Road

Teddington, Middlesex TW11 0LY

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.497	0.429	A		15.9	0.129 - 0.729	0.072	A
Gross beta	3.91	3.52	A		11.1	1.76 - 5.28	0.31	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (LOCK03) Advanced Test Reactor (ATR) Complex Radioanalytical Laboratory
 INL/Battelle Energy Alliance, LLC
 Idaho Falls, ID 83415-7111

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.233	0.429	A		-45.7	0.129 - 0.729	0.074	N
Gross beta	4.02	3.52	A		14.2	1.76 - 5.28	0.25	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (MAHP59) Materials Assessment and Health Physics Group
 Imperial College Reactor Centre
 Ascot, Berkshire SL5 7TE

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.24	0.429	A		-44.1	0.129 - 0.729	0.21	N
Gross beta	3.64	3.52	A		3.4	1.76 - 5.28	0.27	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (MART01) Fluor B&W Ports Analytical Laboratory
 Lab COC, Bldg. X-710, Rm 222
 Piketon, OH 45661-

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.381	0.429	A		-11.2	0.129 - 0.729	0.161	N
Gross beta	3.64	3.52	A		3.4	1.76 - 5.28	0.335	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (MART03) Radioactive Material Analysis Laboratory
 ORNL
 Oak Ridge, TN 37830

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.27	0.429	A		-37.1	0.129 - 0.729	0.08	W
Gross beta	3.6	3.52	A		2.3	1.76 - 5.28	0.24	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (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
Gross alpha	0.585	0.429	A		36.4	0.129 - 0.729	0.133	W
Gross beta	3.65	3.52	A		3.7	1.76 - 5.28	0.229	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP $<$ 2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15% $<$ RP \leq 30%
- 4) NOT ACCEPTABLE.....RP $>$ 30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33

(NESI01) B&W Technical Services-Radioisotope & Analytical Chemistry Laboratory

Lynchburg Technology Center

Lynchburg, VA 24504-5447

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.416	0.429	A		-3.0	0.129 - 0.729	0.046	A
Gross beta	4.18	3.52	A		18.8	1.76 - 5.28	0.102	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (NJDH01) New Jersey Dept. of Health, PHEL, ECLS
 3 Schwarzkopf Drive
 West Trenton, NJ 08628

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.622	0.429	A		45.0	0.129 - 0.729	0.041	A
Gross beta	3.774	3.52	A		7.2	1.76 - 5.28	0.025	N

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (NOCS99) National Oceanography Centre, Southampton
 GAU-Radioanalytical
 Southampton, Hampshire SO14 3ZH

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.27	0.429	A		-37.1	0.129 - 0.729	0.08	W
Gross beta	3.9	3.52	A		10.8	1.76 - 5.28	0.2	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (NRL99) Environmental Radioactivity - National Centre for Radiation Science
 PO Box 25099
 Christchurch, Christchurch 8144

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.476	0.429	A		11.0	0.129 - 0.729	0.021	A
Gross beta	3.456	3.52	A		-1.8	1.76 - 5.28	0.082	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (ODHL01) Ohio Department of Health Laboratory
 8995 E Main Street
 Reynoldsburg, OH 43068

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.47	0.429	A		9.6	0.129 - 0.729	0.15	N
Gross beta	3.93	3.52	A		11.6	1.76 - 5.28	0.39	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33

(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
Gross alpha	0.382	0.429	A		-11.0	0.129 - 0.729	0.031	A
Gross beta	3.437	3.52	A		-2.4	1.76 - 5.28	0.058	N

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (OTLI01) Outreach Laboratory, a Division of ESC Lab Sciences
 311 N. Aspen
 Broken Arrow, OK 74012-

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.629	0.429	A		46.6	0.129 - 0.729	0.082	A
Gross beta	4.03	3.52	A		14.5	1.76 - 5.28	0.112	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33

(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
Gross alpha	0.574	0.429	A		33.8	0.129 - 0.729	0.0592	A
Gross beta	3.27	3.52	A		-7.1	1.76 - 5.28	0.17	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (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
Gross alpha	0.254	0.429	A		-40.8	0.129 - 0.729	0.0427	W
Gross beta	3.48	3.52	A		-1.1	1.76 - 5.28	0.233	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (RAVR99) Radiactividad Ambiental y Vigilancia Radiologica
 CIEMAT (Ed 70 P2 D11)
 Madrid, Madrid 28040

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	NR	0.429				0.129 - 0.729		
Gross beta	3.93	3.52	A		11.6	1.76 - 5.28	0.34	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33

(RPSC01) Radiation Protection Service

Ontario Ministry of Labour

Weston, Ontario M9P 3T1

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.57	0.429	A		32.9	0.129 - 0.729	0.11	W
Gross beta	2.71	3.52	A		-23.0	1.76 - 5.28	0.27	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (SANC99) RadioAnalysis, South Africa Nuclear Energy Corp.
 Sample Receipt Gate 1
 Pretoria, Gauteng 0001

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.636	0.429	A		48.3	0.129 - 0.729	0.118	W
Gross beta	3.35	3.52	A		-4.8	1.76 - 5.28	0.25	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (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
Gross alpha	0.477	0.429	A		11.2	0.129 - 0.729	0.124	W
Gross beta	3.71	3.52	A		5.4	1.76 - 5.28	0.27	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (SNRC99) Soreq NRC
 Radioactivity Measurement Section
 Yavne, Israel 81800

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.45	0.429	A		4.9	0.129 - 0.729	0.09	W
Gross beta	4.36	3.52	A		23.9	1.76 - 5.28	0.31	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (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
Gross alpha	0.530	0.429	A		23.5	0.129 - 0.729	0.0607	A
Gross beta	3.58	3.52	A		1.7	1.76 - 5.28	0.225	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (TDHL01) Texas Department of State Health Services Laboratory
 1100 W 49th Street
 Austin, TX 78756

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.466	0.429	A		8.6	0.129 - 0.729	0.036	A
Gross beta	3.601	3.52	A		2.3	1.76 - 5.28	0.090	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (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
Gross alpha	0.41	0.429	A		-4.4	0.129 - 0.729	0.04	A
Gross beta	3.45	3.52	A		-2.0	1.76 - 5.28	0.07	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (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
Gross alpha	0.444	0.429	A		3.5	0.129 - 0.729	0.112	W
Gross beta	3.805	3.52	A		8.1	1.76 - 5.28	0.164	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (TNUT01) St. Louis USACE FUSRAP Laboratory
 8945 LATTY AVE
 BERKELEY, MO 63134-

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	.6421	0.429	A		49.7	0.129 - 0.729	.2663	N
Gross beta	3.0573	3.52	A		-13.1	1.76 - 5.28	.6244	W

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (ULFM99) University of La Laguna FISICA Medica
 Faculty of Medicine -Univ. of La Laguna
 Tenerife, Canary Islands 38296

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.356	0.429	A		-17.0	0.129 - 0.729	0.023	A
Gross beta	3.38	3.52	A		-4.0	1.76 - 5.28	0.09	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33

(USED99) National Center for Nuclear Energy, Sciences and Techniques
 CNESTEN BP 1382
 RABAT, RABAT RP 10001

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.31	0.429	A		-27.7	0.129 - 0.729	0.02	A
Gross beta	3.46	3.52	A		-1.7	1.76 - 5.28	0.62	W

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (WEST04) PACE ANALYTICAL SERVICES, PITTSBURGH
 1638 Roseytown Road
 Greensburg, PA 15601

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.484	0.429	A		12.8	0.129 - 0.729	0.124	W
Gross beta	3.2033	3.52	A		-9.0	1.76 - 5.28	0.5887	W

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (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
Gross alpha	0.349	0.429	A		-18.6	0.129 - 0.729	0.039	A
Gross beta	3.58	3.52	A		1.7	1.76 - 5.28	0.075	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (WVDP01) WVDP Environmental Laboratory
 10282 Rock Springs Road
 West Valley, NY 14171

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.390	0.429	A		-9.1	0.129 - 0.729	0.0422	A
Gross beta	3.70	3.52	A		5.1	1.76 - 5.28	0.0752	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



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

Laboratory Results For MAPEP-15-GrW33
 (ZIOS99) ZVD Institute of Occupational Safety
 Chengdujska Cesta 25
 Ljubljana-Polje, Slovenia SI-1260

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.02	0.429	N		-95.3	0.129 - 0.729	0.01	N
Gross beta	1.76	3.52	A		-50.0	1.76 - 5.28	0.36	W

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias \leq +/- 70% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 70% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias \leq +/- 50% with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $>$ +/- 50% or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

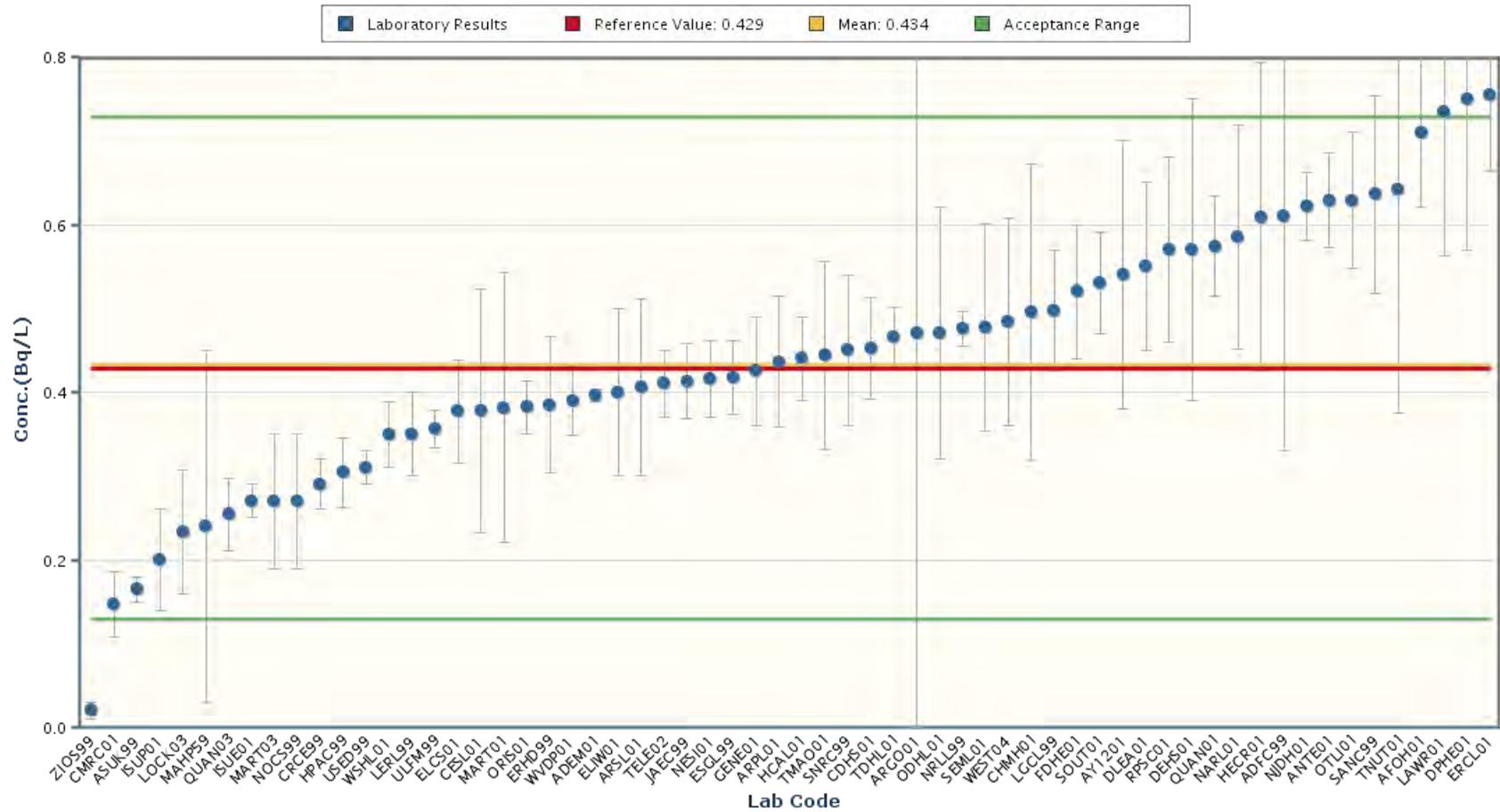
Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Gross alpha

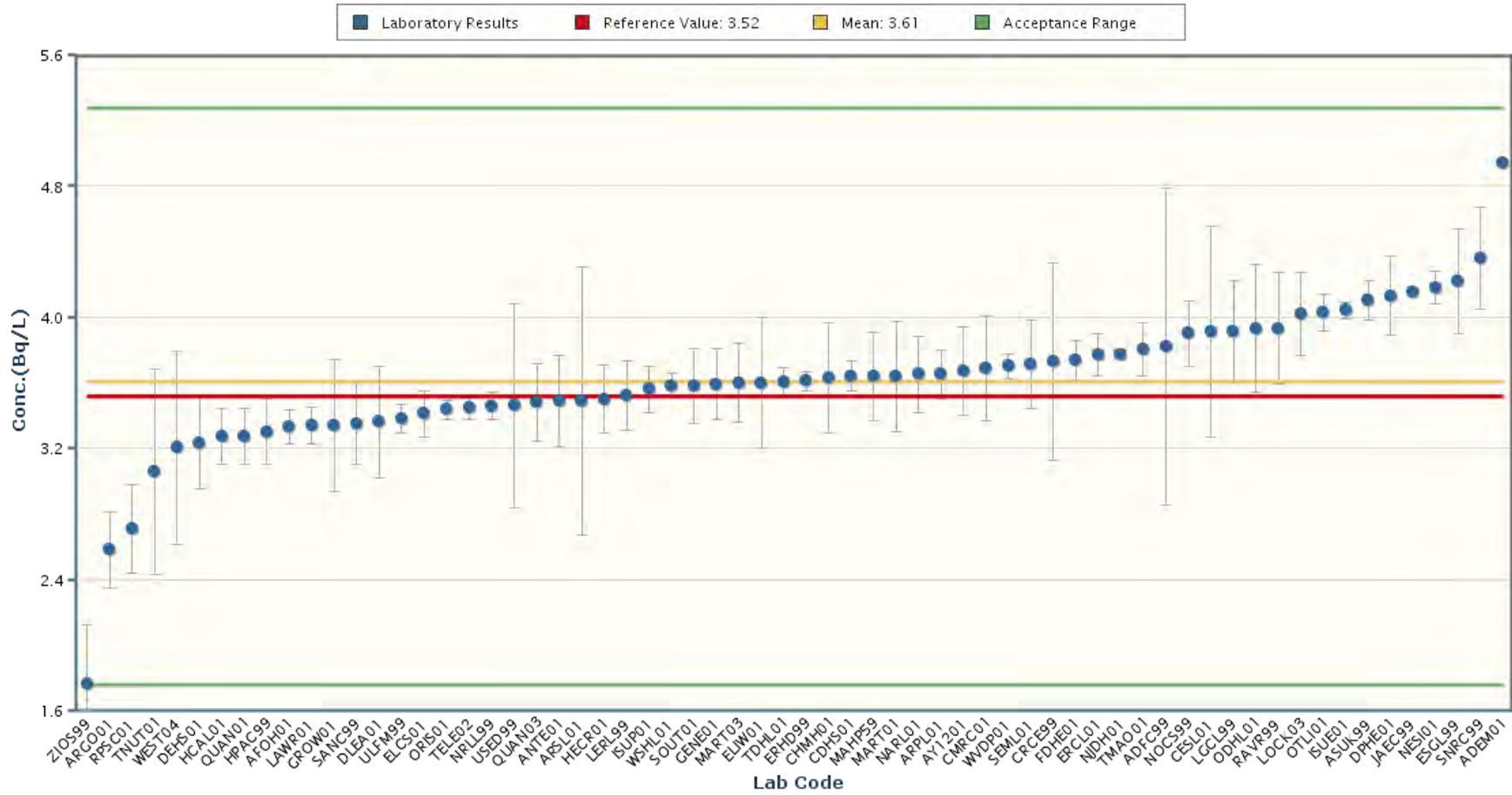
MAPEP-15-GrW33



Notes:
The chart shows only data points with values between -0.218 and 1.085 (± 5 Standard Deviations).

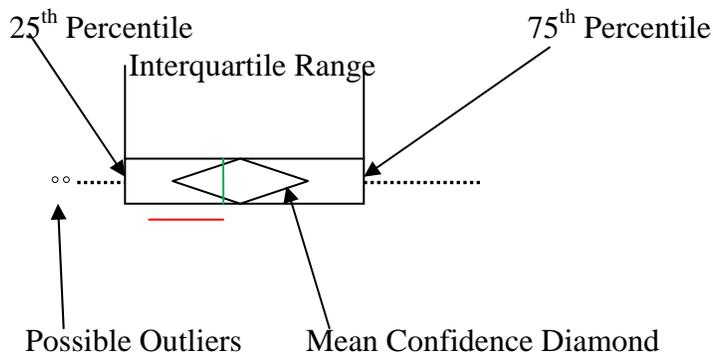
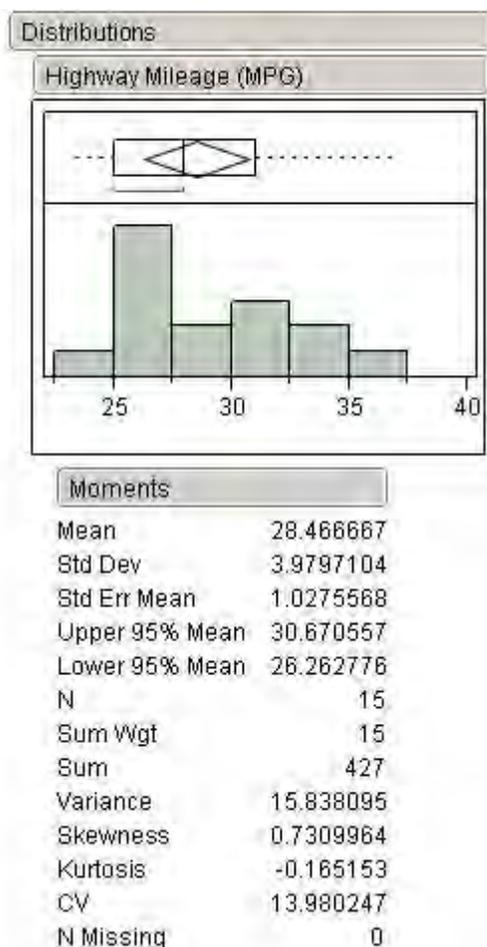
Gross beta

MAPEP-15-GrW33



Notes:
The chart shows only data points with values between 1.44 and 5.78 (± 5 Standard Deviations).

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. The data points (small 'dots') plot the bias (or z-score for organic constituents) of each of the analytes in each of the matrices. The BLACK small vertical line inside the small rectangle at the top of the data distribution graph is the mean of the population of the bias shown for that analyte in the matrix.



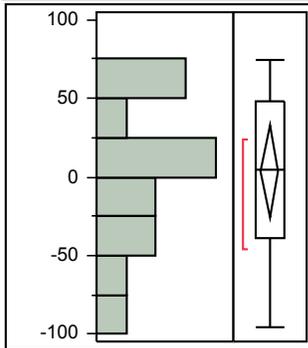
The box plots summarize the distribution of points for each analyte. The ends of the box are the 25th and 75th quantiles. The difference between the quartiles is the interquartile range. The line across the middle of the box identifies the median bias value. Each box has lines, sometimes called whiskers, which extend from each end. The whiskers extend from the ends of the small box to the outermost data point that falls within the distances computed. Any potential outliers are represented as small black dots.

The box plot of the bias data points and the mean visually illustrate the breadth of the distribution and where any potential outliers in the distribution might lie. The moments for the distribution plot are provided below 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.

GrW Distribution by Detection Method

Distributions Analyte_Detection=Gross alpha
Beta Counting - 2 pi gas flow proportional counter

Bias



Quantiles

100.0%	maximum	74.8
99.5%		74.8
97.5%		74.8
90.0%		72.95
75.0%	quartile	48.025
50.0%	median	4.45
25.0%	quartile	-39.25
10.0%		-78.5
2.5%		-95.3
0.5%		-95.3
0.0%	minimum	-95.3

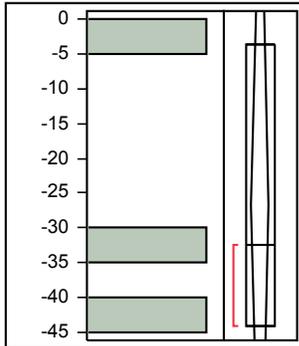
Summary Statistics

Mean	3.4071429
Std Dev	51.050419
Std Err Mean	13.643799
Upper 95% Mean	32.882778
Lower 95% Mean	-26.06849
N	14

GrW Distribution by Detection Method

Distributions Analyte_Detection=Gross alpha
Beta Counting - liquid scintillation counter

Bias



Quantiles

100.0%	maximum	-3.7
99.5%		-3.7
97.5%		-3.7
90.0%		-3.7
75.0%	quartile	-3.7
50.0%	median	-32.4
25.0%	quartile	-44.1
10.0%		-44.1
2.5%		-44.1
0.5%		-44.1
0.0%	minimum	-44.1

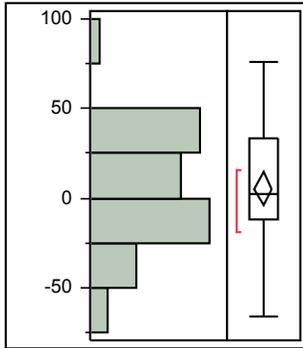
Summary Statistics

Mean	-26.73333
Std Dev	20.787576
Std Err Mean	12.001713
Upper 95% Mean	24.905869
Lower 95% Mean	-78.37254
N	3

GrW Distribution by Detection Method

Distributions Analyte_Detection=Gross alpha Gross
Alpha/Beta - 2 pi gas flow proportional counter

Bias



Quantiles

100.0%	maximum	76
99.5%		76
97.5%		73.37
90.0%		46.6
75.0%	quartile	32.9
50.0%	median	2.6
25.0%	quartile	-11.9
10.0%		-37.1
2.5%		-64.56
0.5%		-65.8
0.0%	minimum	-65.8

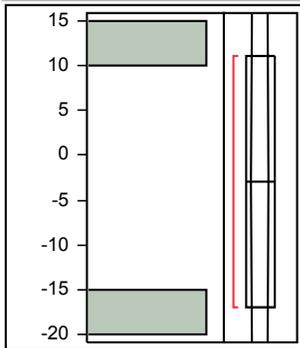
Summary Statistics

Mean	5.3883721
Std Dev	30.668381
Std Err Mean	4.6768843
Upper 95% Mean	14.826707
Lower 95% Mean	-4.049963
N	43

GrW Distribution by Detection Method

Distributions
Analyte_Detection=Gross alpha Other

Bias



Quantiles

100.0%	maximum	11
99.5%		11
97.5%		11
90.0%		11
75.0%	quartile	11
50.0%	median	-3
25.0%	quartile	-17
10.0%		-17
2.5%		-17
0.5%		-17
0.0%	minimum	-17

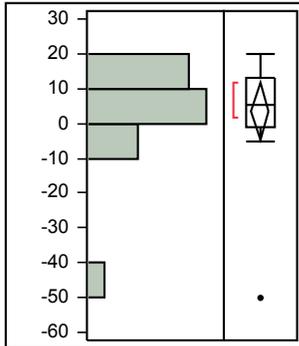
Summary Statistics

Mean	-3
Std Dev	19.79899
Std Err Mean	14
Upper 95% Mean	174.88687
Lower 95% Mean	-180.8869
N	2

GrW Distribution by Detection Method

Distributions Analyte_Detection=Gross beta Beta
Counting - 2 pi gas flow proportional counter

Bias



Quantiles

100.0%	maximum	19.9
99.5%		19.9
97.5%		19.9
90.0%		17.82
75.0%	quartile	12.9
50.0%	median	5.1
25.0%	quartile	-1.15
10.0%		-14.32
2.5%		-50
0.5%		-50
0.0%	minimum	-50

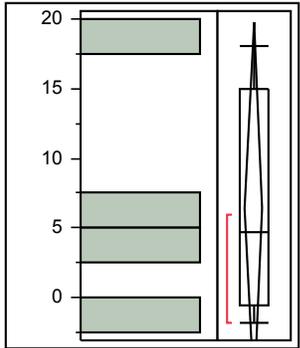
Summary Statistics

Mean	3.4823529
Std Dev	15.788059
Std Err Mean	3.8291667
Upper 95% Mean	11.599824
Lower 95% Mean	-4.635118
N	17

GrW Distribution by Detection Method

Distributions Analyte_Detection=Gross beta
Beta Counting - liquid scintillation counter

Bias



Quantiles

100.0%	maximum	18
99.5%		18
97.5%		18
90.0%		18
75.0%	quartile	15
50.0%	median	4.7
25.0%	quartile	-0.5
10.0%		-1.8
2.5%		-1.8
0.5%		-1.8
0.0%	minimum	-1.8

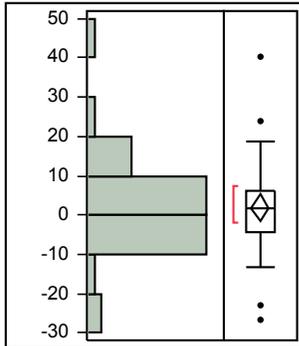
Summary Statistics

Mean	6.4
Std Dev	8.3857021
Std Err Mean	4.1928511
Upper 95% Mean	19.743523
Lower 95% Mean	-6.943523
N	4

GrW Distribution by Detection Method

Distributions Analyte_Detection=Gross beta Gross
Alpha/Beta - 2 pi gas flow proportional counter

Bias



Quantiles

100.0%	maximum	40.3
99.5%		40.3
97.5%		38.66
90.0%		14.68
75.0%	quartile	6.3
50.0%	median	1.7
25.0%	quartile	-4.5
10.0%		-8.68
2.5%		-26.33
0.5%		-26.7
0.0%	minimum	-26.7

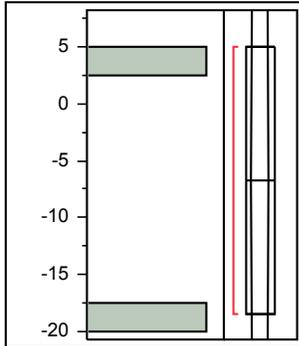
Summary Statistics

Mean	1.7511628
Std Dev	11.228034
Std Err Mean	1.7122591
Upper 95% Mean	5.2066416
Lower 95% Mean	-1.704316
N	43

GrW Distribution by Prep Method

Distributions Analyte_Method=Gross
alpha Coprecipitation, acidified

Bias



Quantiles

100.0%	maximum	4.9
99.5%		4.9
97.5%		4.9
90.0%		4.9
75.0%	quartile	4.9
50.0%	median	-6.75
25.0%	quartile	-18.4
10.0%		-18.4
2.5%		-18.4
0.5%		-18.4
0.0%	minimum	-18.4

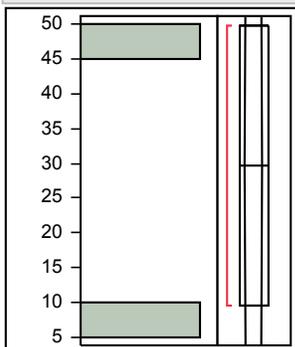
Summary Statistics

Mean	-6.75
Std Dev	16.475588
Std Err Mean	11.65
Upper 95% Mean	141.27729
Lower 95% Mean	-154.7773
N	2

GrW Distribution by Prep Method

Distributions Analyte_Method=Gross
alpha Coprecipitation, straight

Bias



Quantiles

100.0%	maximum	49.7
99.5%		49.7
97.5%		49.7
90.0%		49.7
75.0%	quartile	49.7
50.0%	median	29.65
25.0%	quartile	9.6
10.0%		9.6
2.5%		9.6
0.5%		9.6
0.0%	minimum	9.6

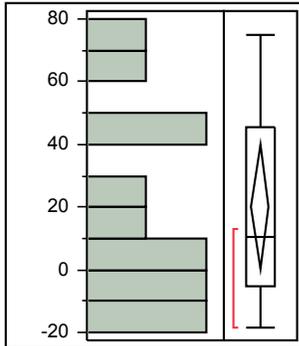
Summary Statistics

Mean	29.65
Std Dev	28.354982
Std Err Mean	20.05
Upper 95% Mean	284.4094
Lower 95% Mean	-225.1094
N	2

GrW Distribution by Prep Method

Distributions Analyte_Method=Gross alpha EPA 900,
Radioactivity, Gross Alpha/Beta Screening, 600/4-80-032

Bias



Quantiles

100.0%	maximum	74.8
99.5%		74.8
97.5%		74.8
90.0%		72.01
75.0%	quartile	45.45
50.0%	median	10.7
25.0%	quartile	-5.15
10.0%		-16.65
2.5%		-18.6
0.5%		-18.6
0.0%	minimum	-18.6

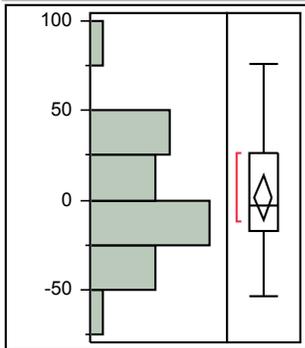
Summary Statistics

Mean	20.125
Std Dev	30.964558
Std Err Mean	8.938698
Upper 95% Mean	39.798942
Lower 95% Mean	0.4510583
N	12

GrW Distribution by Prep Method

**Distributions Analyte_Method=Gross
alpha Evaporation, acidified**

Bias



Quantiles

100.0%	maximum	76
99.5%		76
97.5%		76
90.0%		45.32
75.0%	quartile	25.9
50.0%	median	-2.8
25.0%	quartile	-17
10.0%		-41.78
2.5%		-53.4
0.5%		-53.4
0.0%	minimum	-53.4

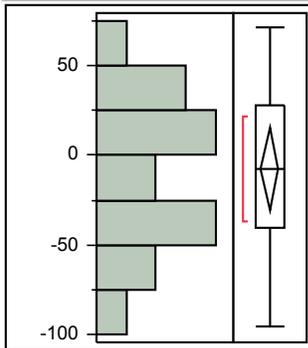
Summary Statistics

Mean	1.4518519
Std Dev	32.027877
Std Err Mean	6.1637678
Upper 95% Mean	14.121658
Lower 95% Mean	-11.21795
N	27

GrW Distribution by Prep Method

Distributions Analyte_Method=Gross
alpha Evaporation, straight

Bias



Quantiles

100.0%	maximum	71.1
99.5%		71.1
97.5%		71.1
90.0%		52.86
75.0%	quartile	27.5
50.0%	median	-7.7
25.0%	quartile	-40.6
10.0%		-71.7
2.5%		-95.3
0.5%		-95.3
0.0%	minimum	-95.3

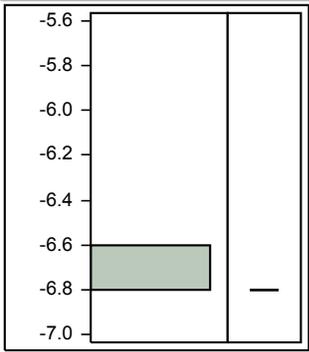
Summary Statistics

Mean	-7.758824
Std Dev	44.759274
Std Err Mean	10.855718
Upper 95% Mean	15.254271
Lower 95% Mean	-30.77192
N	17

GrW Distribution by Prep Method

Distributions Analyte_Method=Gross alpha
No preparation - analyzed as received

Bias



Quantiles

100.0%	maximum	-6.8
99.5%		-6.8
97.5%		-6.8
90.0%		-6.8
75.0%	quartile	-6.8
50.0%	median	-6.8
25.0%	quartile	-6.8
10.0%		-6.8
2.5%		-6.8
0.5%		-6.8
0.0%	minimum	-6.8

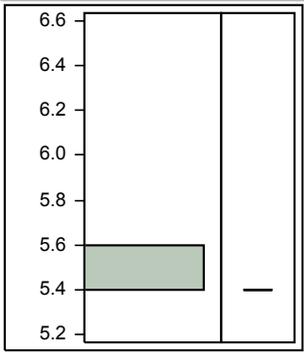
Summary Statistics

Mean	-6.8
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1

GrW Distribution by Prep Method

Distributions
Analyte_Method=Gross alpha Other

Bias



Quantiles

100.0%	maximum	5.4
99.5%		5.4
97.5%		5.4
90.0%		5.4
75.0%	quartile	5.4
50.0%	median	5.4
25.0%	quartile	5.4
10.0%		5.4
2.5%		5.4
0.5%		5.4
0.0%	minimum	5.4

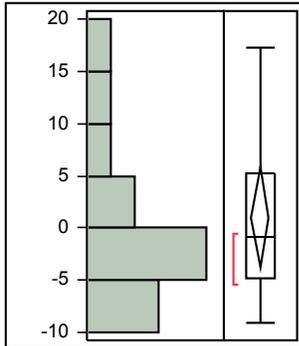
Summary Statistics

Mean	5.4
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1

GrW Distribution by Prep Method

Distributions Analyte_Method=Gross beta EPA 900,
Radioactivity, Gross Alpha/Beta Screening, 600/4-80-032

Bias



Quantiles

100.0%	maximum	17.3
99.5%		17.3
97.5%		17.3
90.0%		16.18
75.0%	quartile	5.2
50.0%	median	-0.9
25.0%	quartile	-4.8
10.0%		-7.56
2.5%		-9
0.5%		-9
0.0%	minimum	-9

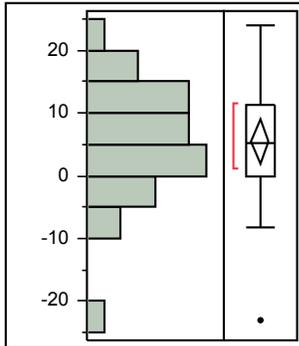
Summary Statistics

Mean	1.0230769
Std Dev	7.8577089
Std Err Mean	2.1793363
Upper 95% Mean	5.7714429
Lower 95% Mean	-3.725289
N	13

GrW Distribution by Prep Method

Distributions Analyte_Method=Gross
beta Evaporation, acidified

Bias



Quantiles

100.0%	maximum	23.9
99.5%		23.9
97.5%		23.9
90.0%		18.72
75.0%	quartile	11.225
50.0%	median	5.25
25.0%	quartile	-0.225
10.0%		-6.79
2.5%		-23
0.5%		-23
0.0%	minimum	-23

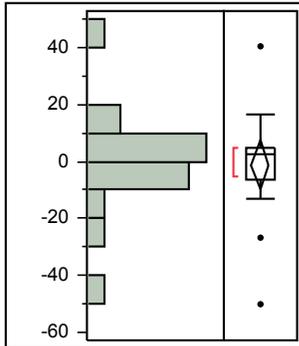
Summary Statistics

Mean	5.4333333
Std Dev	9.5867485
Std Err Mean	1.7502928
Upper 95% Mean	9.0130841
Lower 95% Mean	1.8535826
N	30

GrW Distribution by Prep Method

Distributions Analyte_Method=Gross
beta Evaporation, straight

Bias



Quantiles

100.0%	maximum	40.3
99.5%		40.3
97.5%		40.3
90.0%		16.6
75.0%	quartile	4.8
50.0%	median	2.3
25.0%	quartile	-6.3
10.0%		-26.7
2.5%		-50
0.5%		-50
0.0%	minimum	-50

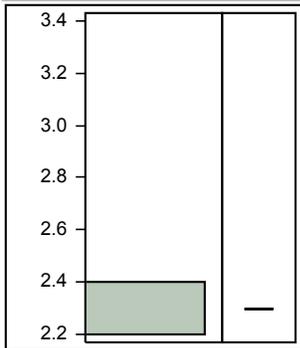
Summary Statistics

Mean	-1.152632
Std Dev	17.714381
Std Err Mean	4.0639577
Upper 95% Mean	7.3854268
Lower 95% Mean	-9.69069
N	19

GrW Distribution by Prep Method

Distributions Analyte_Method=Gross beta
No preparation - analyzed as received

Bias



Quantiles

100.0%	maximum	2.3
99.5%		2.3
97.5%		2.3
90.0%		2.3
75.0%	quartile	2.3
50.0%	median	2.3
25.0%	quartile	2.3
10.0%		2.3
2.5%		2.3
0.5%		2.3
0.0%	minimum	2.3

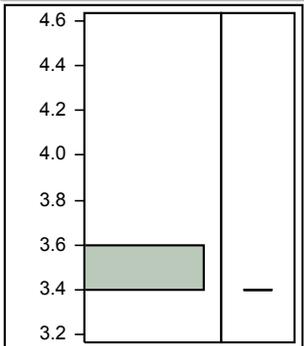
Summary Statistics

Mean	2.3
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1

GrW Distribution by Prep Method

Distributions
Analyte_Method=Gross beta Other

Bias



Quantiles

100.0%	maximum	3.4
99.5%		3.4
97.5%		3.4
90.0%		3.4
75.0%	quartile	3.4
50.0%	median	3.4
25.0%	quartile	3.4
10.0%		3.4
2.5%		3.4
0.5%		3.4
0.0%	minimum	3.4

Summary Statistics

Mean	3.4
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1