

## **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.

### GrW29 Participating Laboratories

Lab Code	Lab Name	Matrix Code	Num Samples
ADEM01	Alabama Department of Environmental Management	GrW	1
AFOH01	USAFSAM/OEA	GrW	2
ANTE01	ALS Environmental - Fort Collins, CO	GrW	1
ARGO01	Idaho National Laboratory	GrW	1
ARPL01	Analytical Support Operations - Radiochemical Processing Lab	GrW	2
ARSL01	ARS International, LLC	GrW	1
ASUK99	NAS Radiochemistry Group	GrW	1
AY1201	B&W Y-12, Analytical Chemistry Organization Laboratory	GrW	1
CDHS01	California Department of Public Health	GrW	1
CESL01	Lawrence Livermore National Laboratory - EMRL	GrW	1
CHMH01	222-S Laboratory	GrW	1
CMRC01	Carlsbad Environmental Monitoring and Research Center	GrW	1
CRCE99	Centre for Radiation, Chemical and Environmental Hazards	GrW	1
DEHS01	Department of Environmental Health & Safety	GrW	1
DLEA01	DLE Associates	GrW	1
DPHE01	Colorado Dept. of Public Health & Env. / Laboratory Services Div.	GrW	1
DRMG01	B&W Pantex - D&RMG	GrW	1
ERCL01	Washington State Public Health Laboratories	GrW	1
ERHD99	Radiation Protection Bureau RSD NMS	GrW	1
ERLG01	Environmental Radiation Laboratory	GrW	1
ESDG99	Radiation Laboratory	GrW	1
ESGL99	Environmental Scientifics Group	GrW	1
FDHE01	Florida Dept of Health Environmental Laboratory	GrW	1
GENE01	GEL Laboratories, LLC	GrW	1
HCAL01	Hazards Control Analytical Lab	GrW	1
HECR01	SC Dept. Health and Environmental Control Radiological Laboratory	GrW	1
HPAC99	PHE, CRCE Scotland	GrW	1
ISUP01	ISU - Department of Physics/Health Physics/EAL	GrW	1
KDHE01	Kansas Dept. of Health & Environment	GrW	1
LAWR01	LAWRENCE BERKELEY NATIONAL LABORATORY	GrW	1
LGCL99	LGC Ltd	GrW	1
LOCK03	Advanced Test Reactor (ATR) Complex Radioanalytical Laboratory	GrW	1
LZCA01	ACZ Laboratories, Inc	GrW	1
MART01	Fluor B&W Ports Analytical Laboratory	GrW	1
MART02	United States Enrichment Corporation	GrW	1
MART03	Radioactive Material Analysis Laboratory	GrW	1
MDPH01	MDPH-Radiation Control Program	GrW	1
MSDH01	Mississippi State Dept of Health	GrW	1
NARL01	National Air and Radiation Environmental Laboratory	GrW	1
NESI01	B&W Technical Services-Radioisotope & Analytical Chemistry Laboratory	GrW	1
NJDH01	New Jersey Dept. of Health, PHEL, ECLS	GrW	1
NOCS99	National Oceanography Centre, Southampton	GrW	1
NRLL99	Environmental Radioactivity - National Centre for Radiation Science	GrW	1
ODHL01	Ohio Department of Health Laboratory	GrW	1
ORIS01	ORISE/IEAV	GrW	1
OTLI01	Outreach Technologies, Inc.	GrW	1
QUAN01	TestAmerica St. Louis	GrW	1
QUAN03	TestAmerica Laboratories - Richland	GrW	1
RMCL99	Royal Scientific Society - Radiation Protection Lab	GrW	1
RPSC01	Radiation Protection Service	GrW	1
RSAL01	RSA Laboratories, Inc.	GrW	1
SANC99	RadioAnalysis, South Africa Nuclear Energy Corp.	GrW	1
SEML01	SRS Environmental Monitoring Laboratory	GrW	1
SNRC99	Soreq NRC	GrW	1
SOUT01	Southwest Research Institute	GrW	1
TDHL01	Texas Department of State Health Services Laboratory	GrW	1
TELE01	TELEDYNE BROWN ENGINEERING - ENVIRONMENTAL SERVICES	GrW	1
TELE02	Environmental, Inc., Midwest Lab	GrW	1
TMAO01	EBERLINE SERVICES OAK RIDGE LABORATORY	GrW	1
TNUT01	St. Louis USACE FUSRAP Laboratory	GrW	1
USED99	National Center for Nuclear Energy, Sciences and Techniques	GrW	1
WEST03	Waste Sampling and Characterization Facility, MSA	GrW	1
WEST04	PACE ANALYTICAL SERVICES, PITTSBURGH	GrW	1
WIPP01	WIPP Laboratories	GrW	1
WSHL01	Wisconsin State Laboratory of Hygiene	GrW	1
WVDP01	WVDP Environmental Laboratory	GrW	1
	<b>Total</b>	<b>GrW</b>	<b>68</b>

## Laboratories Not Reporting GrW29

<b>Lab Code</b>	<b>Lab Name</b>	<b>Matrix Code</b>
ASUK99	NAS Radiochemistry Group	GrW
CRCE99	Centre for Radiation, Chemical and Environmental Hazards	GrW
DEHS01	Department of Environmental Health & Safety	GrW
DRMG01	B&W Pantex - D&RMG	GrW
ESDG99	Radiation Laboratory	GrW
MSDH01	Mississippi State Dept of Health	GrW
RMCL99	Royal Scientific Society - Radiation Protection Lab	GrW
RPSC01	Radiation Protection Service	GrW
RSAL01	RSA Laboratories, Inc.	GrW
WIPP01	WIPP Laboratories	GrW

## Study Reference Values

MAPEP-13-GrW29

*Radiological Reference Date: 08/01/2013*

Analyte	Ref Value	Ref Unc
Radiological	Units: (Bq/L)	
Gross alpha	0.701	0.011
Gross beta	5.94	0.19

## Sample Statistical Summary

MAPEP-13-GrW29

*Radiological Reference Date: 08/01/2013*

Analyte	T(1)	A(2)	Grand(3) Mean	Std Dev	Ref Value	Ref Unc	Acceptance Range
Radiological							Units: (Bq/L)
Gross alpha	56	53	0.669	0.206	0.701	0.011	0.210 - 1.192
Gross beta	56	56	6.36	0.81	5.94	0.19	2.97 - 8.91

**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  $\leq 2$ , 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).

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### Other Flags:

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

**Study: MAPEP-13-GrW29**

**Radiological**

Analyte	A	W	RW	N
Gross alpha	53			3
Gross beta	56			



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

*Laboratory Results For MAPEP-13-GrW29*

(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	2.53	0.701	N		260.9	0.210 - 1.192	0.01	L
Gross beta	8.67	5.94	A		46.0	2.97 - 8.91	0.01	L

*Radiological Reference Date: August 1, 2013*

**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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

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

*Laboratory Results For MAPEP-13-GrW29*

(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	0.529	0.701	A		-24.5	0.210 - 1.192	0.055	
Gross beta	6.40	5.94	A		7.7	2.97 - 8.91	0.095	L

*Radiological Reference Date: August 1, 2013*

**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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

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Laboratory Results For MAPEP-13-GrW29  
 (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	0.757	0.701	A		8.0	0.210 - 1.192	0.071	
Gross beta	6.17	5.94	A		3.9	2.97 - 8.91	0.50	

Radiological Reference Date: August 1, 2013

**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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

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*Laboratory Results For MAPEP-13-GrW29*

(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	1.3E-01	0.701	N		-81.5	0.210 - 1.192	2.8E-01	H
Gross beta	8.0E+00	5.94	A		34.7	2.97 - 8.91	1.8E+00	H

*Radiological Reference Date: August 1, 2013*

**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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

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

*Laboratory Results For MAPEP-13-GrW29*

(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	0.92	0.701	A		31.2	0.210 - 1.192	0.11	
Gross beta	5.98	5.94	A		0.7	2.97 - 8.91	0.22	

*Radiological Reference Date: August 1, 2013*

**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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

**Other Flags:**

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

*Laboratory Results For MAPEP-13-GrW29*

(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	0.848	0.701	A		21.0	0.210 - 1.192	0.070	
Gross beta	5.572	5.94	A		-6.2	2.97 - 8.91	0.058	L

*Radiological Reference Date: August 1, 2013*

**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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

**Other Flags:**

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

*Laboratory Results For MAPEP-13-GrW29*

(AY1201) B&W Y-12, 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	0.54	0.701	A		-23.0	0.210 - 1.192	0.13	H
Gross beta	6.64	5.94	A		11.8	2.97 - 8.91	0.29	

*Radiological Reference Date: August 1, 2013*

**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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

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Laboratory Results For MAPEP-13-GrW29  
 (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	0.613	0.701	A		-12.6	0.210 - 1.192	0.0745	
Gross beta	6.34	5.94	A		6.7	2.97 - 8.91	0.121	L

Radiological Reference Date: August 1, 2013

**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  $\leq 2$ , 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).

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

*Laboratory Results For MAPEP-13-GrW29*

(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	2.82E-01	0.701	A		-59.8	0.210 - 1.192	7.78E-02	H
Gross beta	6.56E+00	5.94	A		10.4	2.97 - 8.91	3.95E-01	

*Radiological Reference Date: August 1, 2013*

**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).

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

Laboratory Results For MAPEP-13-GrW29

(CHMH01) 222-S Laboratory

P.O. Box 250, MS T6-10

Richland, WA 99352

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.673	0.701	A		-4.0	0.210 - 1.192	0.195	H
Gross beta	6.22	5.94	A		4.7	2.97 - 8.91	0.441	

Radiological Reference Date: August 1, 2013

**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).

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**Gross Beta Flags:**

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

Laboratory Results For MAPEP-13-GrW29  
 (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	0.3185	0.701	A		-54.6	0.210 - 1.192	0.0133	
Gross beta	5.968	5.94	A		0.5	2.97 - 8.91	0.078	L

Radiological Reference Date: August 1, 2013

**Gross Alpha Flags:**

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**Other Flags:**

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)



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

*Laboratory Results For MAPEP-13-GrW29*

(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	0.69	0.701	A		-1.6	0.210 - 1.192	0.29	H
Gross beta	7.18	5.94	A		20.9	2.97 - 8.91	0.49	

*Radiological Reference Date: August 1, 2013*

**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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

**Other Flags:**

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)



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

*Laboratory Results For MAPEP-13-GrW29*

(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	1.15	0.701	A		64.1	0.210 - 1.192	0.18	
Gross beta	6.88	5.94	A		15.8	2.97 - 8.91	0.30	

*Radiological Reference Date: August 1, 2013*

**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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

**Other Flags:**

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)



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

Laboratory Results For MAPEP-13-GrW29  
 (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	.437	0.701	A		-37.7	0.210 - 1.192	.061	
Gross beta	5.29	5.94	A		-10.9	2.97 - 8.91	.16	

Radiological Reference Date: August 1, 2013

**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  $\leq$  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  $\leq$  2, i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

**Other Flags:**

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)



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

*Laboratory Results For MAPEP-13-GrW29*  
 (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	0.5605	0.701	A		-20.0	0.210 - 1.192	0.1440	H
Gross beta	6.3036	5.94	A		6.1	2.97 - 8.91	1.560	H

*Radiological Reference Date: August 1, 2013*

#### 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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

#### Other Flags:

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)



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

Laboratory Results For MAPEP-13-GrW29  
 (ERLG01) Environmental Radiation Laboratory  
 Georgia Institute of Tech.  
 Atlanta, GA 30332

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	.74	0.701	A		5.6	0.210 - 1.192	.37	H
Gross beta	6.1	5.94	A		2.7	2.97 - 8.91	.41	

Radiological Reference Date: August 1, 2013

**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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

**Other Flags:**

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

Laboratory Results For MAPEP-13-GrW29  
 (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	0.542	0.701	A		-22.7	0.210 - 1.192	0.056	
Gross beta	7.83	5.94	A		31.8	2.97 - 8.91	0.58	

Radiological Reference Date: August 1, 2013

**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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

**Other Flags:**

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)



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

*Laboratory Results For MAPEP-13-GrW29*

(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	0.7	0.701	A		-0.1	0.210 - 1.192	0.1	
Gross beta	6.3	5.94	A		6.1	2.97 - 8.91	0.2	

*Radiological Reference Date: August 1, 2013*

**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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

**Other Flags:**

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

*Laboratory Results For MAPEP-13-GrW29*

(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	7.93E-01	0.701	A		13.1	0.210 - 1.192	9.60E-02	
Gross beta	6.22E00	5.94	A		4.7	2.97 - 8.91	5.26E-01	

*Radiological Reference Date: August 1, 2013*

**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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

**Other Flags:**

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

Laboratory Results For MAPEP-13-GrW29  
 (HCAL01) Hazards Control Analytical Lab  
 Lawrence Livermore National  
 Livermore, CA 94551

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	.74	0.701	A		5.6	0.210 - 1.192	.08	
Gross beta	5.94	5.94	A		0.0	2.97 - 8.91	.31	

Radiological Reference Date: August 1, 2013

**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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

**Other Flags:**

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)



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

*Laboratory Results For MAPEP-13-GrW29*

(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	0.488	0.701	A		-30.4	0.210 - 1.192	0.229	H
Gross beta	5.25	5.94	A		-11.6	2.97 - 8.91	0.23	

*Radiological Reference Date: August 1, 2013*

**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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

**Other Flags:**

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)



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

*Laboratory Results For MAPEP-13-GrW29*

(HPAC99) PHE, CRCE Scotland

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	0.391	0.701	A		-44.2	0.210 - 1.192	0.060	
Gross beta	4.66	5.94	A		-21.5	2.97 - 8.91	0.29	

*Radiological Reference Date: August 1, 2013*

**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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

**Other Flags:**

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)



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

*Laboratory Results For MAPEP-13-GrW29*

(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	0.44	0.701	A		-37.2	0.210 - 1.192	0.23	H
Gross beta	6.31	5.94	A		6.2	2.97 - 8.91	0.13	L

*Radiological Reference Date: August 1, 2013*

**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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

**Other Flags:**

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)



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

Laboratory Results For MAPEP-13-GrW29  
 (KDHE01) Kansas Dept. of Health & Environment  
 Forbes Bldg. 740  
 Topeka, KS 66620

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.82	0.701	A		17.0	0.210 - 1.192	0.13	
Gross beta	6.75	5.94	A		13.6	2.97 - 8.91	0.24	

*Radiological Reference Date: August 1, 2013*

#### 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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

#### Other Flags:

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)



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

Laboratory Results For MAPEP-13-GrW29  
 (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	.84	0.701	A		19.8	0.210 - 1.192	.24	H
Gross beta	6.3	5.94	A		6.1	2.97 - 8.91	.17	L

Radiological Reference Date: August 1, 2013

**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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

**Other Flags:**

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

*Laboratory Results For MAPEP-13-GrW29*

(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	0.448	0.701	A		-36.1	0.210 - 1.192	0.066	
Gross beta	5.36	5.94	A		-9.8	2.97 - 8.91	0.43	

*Radiological Reference Date: August 1, 2013*

**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  $\leq$  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  $\leq$  2, i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

**Other Flags:**

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H = Uncertainty potentially too high (for information purposes only)



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

Laboratory Results For MAPEP-13-GrW29  
 (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	0.42	0.701	A		-40.1	0.210 - 1.192	0.07	
Gross beta	7.26	5.94	A		22.2	2.97 - 8.91	0.34	

Radiological Reference Date: August 1, 2013

**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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

**Other Flags:**

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H = Uncertainty potentially too high (for information purposes only)



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

*Laboratory Results For MAPEP-13-GrW29*

(LZCA01) ACZ Laboratories, Inc

2273 Downhill Drive

Steamboat Springs, CO 80487

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.543	0.701	A		-22.5	0.210 - 1.192	0.18	H
Gross beta	7.65	5.94	A		28.8	2.97 - 8.91	0.37	

*Radiological Reference Date: August 1, 2013*

**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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

**Other Flags:**

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)



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

Laboratory Results For MAPEP-13-GrW29  
 (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	0.592	0.701	A		-15.5	0.210 - 1.192	0.10323	
Gross beta	6.96	5.94	A		17.2	2.97 - 8.91	0.2553	

*Radiological Reference Date: August 1, 2013*

#### 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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

#### Other Flags:

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)



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

Laboratory Results For MAPEP-13-GrW29  
 (MART02) United States Enrichment Corporation  
 PO Box 1410  
 Paducah, KY 42002

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.7534	0.701	A		7.5	0.210 - 1.192	0.1271	
Gross beta	4.8238	5.94	A		-18.8	2.97 - 8.91	0.2731	

*Radiological Reference Date: August 1, 2013*

#### 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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

#### Other Flags:

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)



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

Laboratory Results For MAPEP-13-GrW29  
 (MART03) Radioactive Material Analysis Laboratory  
 ORNL  
 Oak Ridge, TN 37831-6223

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.63	0.701	A		-10.1	0.210 - 1.192	0.18	H
Gross beta	6.13	5.94	A		3.2	2.97 - 8.91	0.49	

Radiological Reference Date: August 1, 2013

**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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

**Other Flags:**

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)



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

Laboratory Results For MAPEP-13-GrW29  
 (MDPH01) MDPH-Radiation Control Program  
 MERL-Room 002  
 Jamaica Plain, MA 02130-3597

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.41	0.701	A		-41.5	0.210 - 1.192	0.03	
Gross beta	7.67	5.94	A		29.1	2.97 - 8.91	0.54	

*Radiological Reference Date: August 1, 2013*

#### 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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

#### Other Flags:

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)



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

*Laboratory Results For MAPEP-13-GrW29*

(NARL01) National Air and 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	1.10	0.701	A		56.9	0.210 - 1.192	0.251	H
Gross beta	6.15	5.94	A		3.5	2.97 - 8.91	0.397	

*Radiological Reference Date: August 1, 2013*

**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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

**Other Flags:**

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)



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

*Laboratory Results For MAPEP-13-GrW29*

(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	0.716	0.701	A		2.1	0.210 - 1.192	0.048	
Gross beta	5.55	5.94	A		-6.6	2.97 - 8.91	0.091	L

*Radiological Reference Date: August 1, 2013*

**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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

**Other Flags:**

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)



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

Laboratory Results For MAPEP-13-GrW29  
 (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	1.014	0.701	A		44.7	0.210 - 1.192	0.038	
Gross beta	5.98	5.94	A		0.7	2.97 - 8.91	0.66	

Radiological Reference Date: August 1, 2013

**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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

**Other Flags:**

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)



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

Laboratory Results For MAPEP-13-GrW29  
 (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	0.75	0.701	A		7.0	0.210 - 1.192	0.08	
Gross beta	7.3	5.94	A		22.9	2.97 - 8.91	0.4	

*Radiological Reference Date: August 1, 2013*

#### 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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

#### Other Flags:

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)



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

*Laboratory Results For MAPEP-13-GrW29*

(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	0.727	0.701	A		3.7	0.210 - 1.192	0.021	L
Gross beta	5.49	5.94	A		-7.6	2.97 - 8.91	0.11	L

*Radiological Reference Date: August 1, 2013*

**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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

**Other Flags:**

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)



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

Laboratory Results For MAPEP-13-GrW29  
 (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	0.672	0.701	A		-4.1	0.210 - 1.192	0.185	H
Gross beta	6.610	5.94	A		11.3	2.97 - 8.91	0.435	

*Radiological Reference Date: August 1, 2013*

#### 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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

#### Other Flags:

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)



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

*Laboratory Results For MAPEP-13-GrW29*

(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	0.706	0.701	A		0.7	0.210 - 1.192	0.044	
Gross beta	6.242	5.94	A		5.1	2.97 - 8.91	0.079	L

*Radiological Reference Date: August 1, 2013*

**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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

**Other Flags:**

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)



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

Laboratory Results For MAPEP-13-GrW29

(OTLI01) Outreach Technologies, Inc.

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	0.651	0.701	A		-7.1	0.210 - 1.192	0.157	H
Gross beta	6.62	5.94	A		11.4	2.97 - 8.91	0.237	

Radiological Reference Date: August 1, 2013

**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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

**Other Flags:**

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)



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

*Laboratory Results For MAPEP-13-GrW29*

(QUAN01) TestAmerica St. Louis

13715 Rider Trail North

Earth City, MO 63045-

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.356	0.701	A		-49.2	0.210 - 1.192	0.0503	
Gross beta	5.64	5.94	A		-5.1	2.97 - 8.91	0.293	

*Radiological Reference Date: August 1, 2013*

**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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

**Other Flags:**

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)



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

Laboratory Results For MAPEP-13-GrW29  
 (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	0.890	0.701	A		27.0	0.210 - 1.192	0.0120	L
Gross beta	5.33	5.94	A		-10.3	2.97 - 8.91	0.352	

Radiological Reference Date: August 1, 2013

**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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

**Other Flags:**

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)



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

Laboratory Results For MAPEP-13-GrW29  
 (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	1.43	0.701	N		104.0	0.210 - 1.192	0.12	
Gross beta	7.82	5.94	A		31.7	2.97 - 8.91	0.31	

Radiological Reference Date: August 1, 2013

#### 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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

#### Other Flags:

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)



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

Laboratory Results For MAPEP-13-GrW29  
 (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	0.735	0.701	A		4.9	0.210 - 1.192	0.17	H
Gross beta	6.60	5.94	A		11.1	2.97 - 8.91	0.37	

*Radiological Reference Date: August 1, 2013*

#### 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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

#### Other Flags:

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)



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

Laboratory Results For MAPEP-13-GrW29  
 (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	0.78	0.701	A		11.3	0.210 - 1.192	0.14	
Gross beta	6.04	5.94	A		1.7	2.97 - 8.91	0.38	

Radiological Reference Date: August 1, 2013

**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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

**Other Flags:**

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)



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

Laboratory Results For MAPEP-13-GrW29  
 (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	0.670	0.701	A		-4.4	0.210 - 1.192	0.0685	
Gross beta	5.78	5.94	A		-2.7	2.97 - 8.91	0.353	

Radiological Reference Date: August 1, 2013

**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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

**Other Flags:**

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)



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

*Laboratory Results For MAPEP-13-GrW29*

(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	0.736	0.701	A		5.0	0.210 - 1.192	0.048	
Gross beta	6.011	5.94	A		1.2	2.97 - 8.91	0.079	L

*Radiological Reference Date: August 1, 2013*

**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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

**Other Flags:**

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)



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

*Laboratory Results For MAPEP-13-GrW29*

(TELE01) TELEDYNE BROWN ENGINEERING - ENVIRONMENTAL SERVICES

2508 Quality Lane

Knoxville, TN 37931-6819

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	1.13	0.701	A		61.2	0.210 - 1.192	0.336	H
Gross beta	7.61	5.94	A		28.1	2.97 - 8.91	0.399	

*Radiological Reference Date: August 1, 2013*

**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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

**Other Flags:**

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)



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

Laboratory Results For MAPEP-13-GrW29  
 (TELE02) 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	0.54	0.701	A		-23.0	0.210 - 1.192	0.05	
Gross beta	5.85	5.94	A		-1.5	2.97 - 8.91	0.09	L

*Radiological Reference Date: August 1, 2013*

#### 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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

#### Other Flags:

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)



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

Laboratory Results For MAPEP-13-GrW29  
 (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	.956	0.701	A		36.4	0.210 - 1.192	.239	H
Gross beta	6.978	5.94	A		17.5	2.97 - 8.91	.324	

Radiological Reference Date: August 1, 2013

#### 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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

#### Other Flags:

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)



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

Laboratory Results For MAPEP-13-GrW29  
 (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	0.66	0.701	A		-5.8	0.210 - 1.192	0.28	H
Gross beta	5.55	5.94	A		-6.6	2.97 - 8.91	0.67	

*Radiological Reference Date: August 1, 2013*

#### 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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

#### Other Flags:

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)



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

*Laboratory Results For MAPEP-13-GrW29*

(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	0.29	0.701	A		-58.6	0.210 - 1.192	0.08	H
Gross beta	6.50	5.94	A		9.4	2.97 - 8.91	0.34	

*Radiological Reference Date: August 1, 2013*

**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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

**Other Flags:**

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)



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

Laboratory Results For MAPEP-13-GrW29  
 (WEST03) Waste Sampling and Characterization Facility, MSA  
 PO Box 650, S3-30  
 Richland, WA 99352

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.526	0.701	A		-25.0	0.210 - 1.192	.064	
Gross beta	6.68	5.94	A		12.5	2.97 - 8.91	.359	

Radiological Reference Date: August 1, 2013

**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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

**Other Flags:**

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)



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

Laboratory Results For MAPEP-13-GrW29  
 (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	0.932	0.701	A		33.0	0.210 - 1.192	0.203	H
Gross beta	6.07	5.94	A		2.2	2.97 - 8.91	1.1	

Radiological Reference Date: August 1, 2013

**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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

**Other Flags:**

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)



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

Laboratory Results For MAPEP-13-GrW29  
 (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	0.6035	0.701	A		-13.9	0.210 - 1.192	0.1121	
Gross beta	5.906	5.94	A		-0.6	2.97 - 8.91	0.184	

Radiological Reference Date: August 1, 2013

#### 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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

#### Other Flags:

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)



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

Laboratory Results For MAPEP-13-GrW29  
 (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	0.731	0.701	A		4.3	0.210 - 1.192	0.0951	
Gross beta	6.14	5.94	A		3.4	2.97 - 8.91	0.179	L

Radiological Reference Date: August 1, 2013

**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  $\leq 2$ , 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  $\leq 2$ , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

**Other Flags:**

L = Uncertainty potentially too low (for information purposes only)

H = Uncertainty potentially too high (for information purposes only)

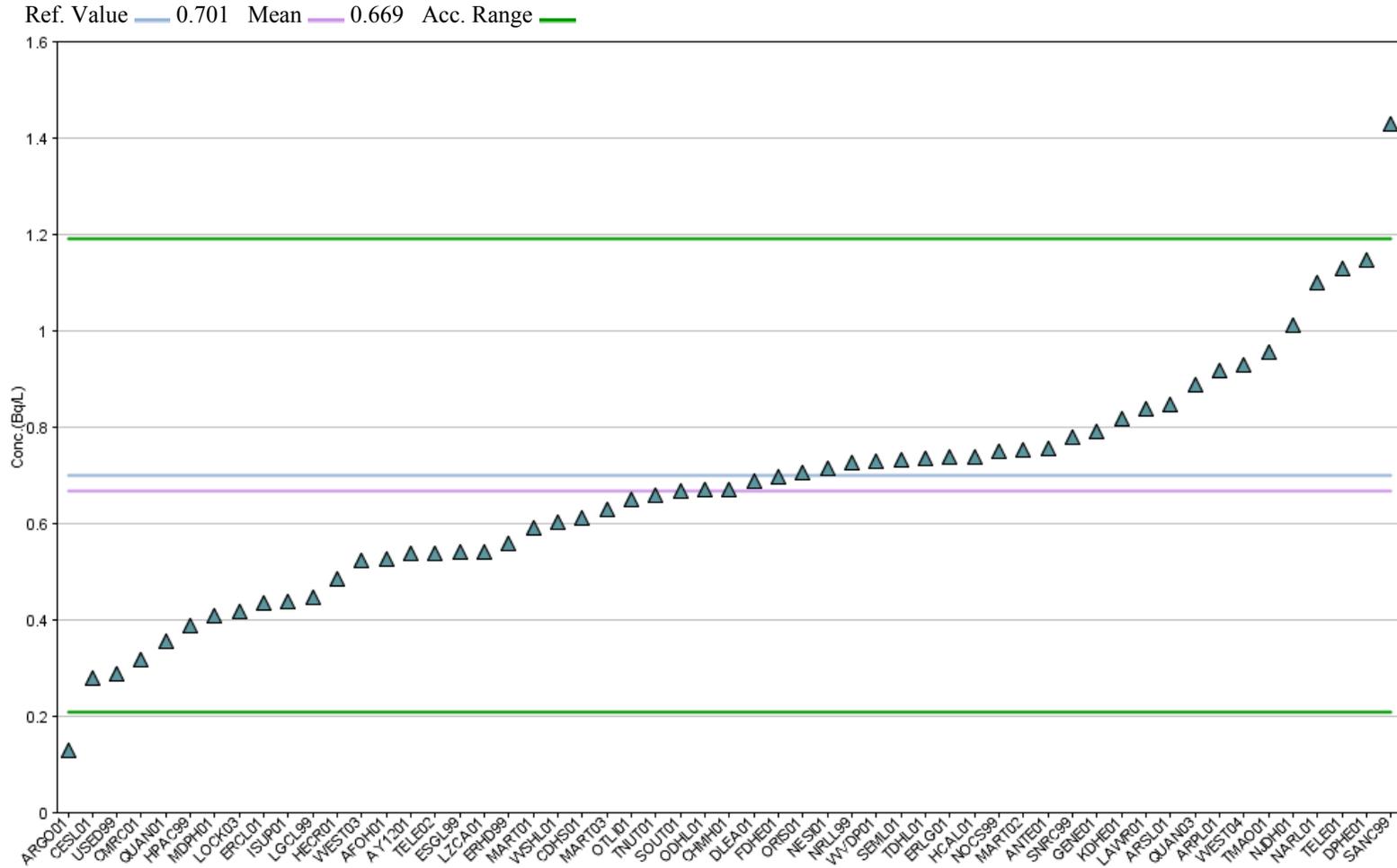
# **MAPEP-13-GrW29**

**Gross alpha/beta water**

June 18, 2013 - November 6, 2013

# Gross alpha

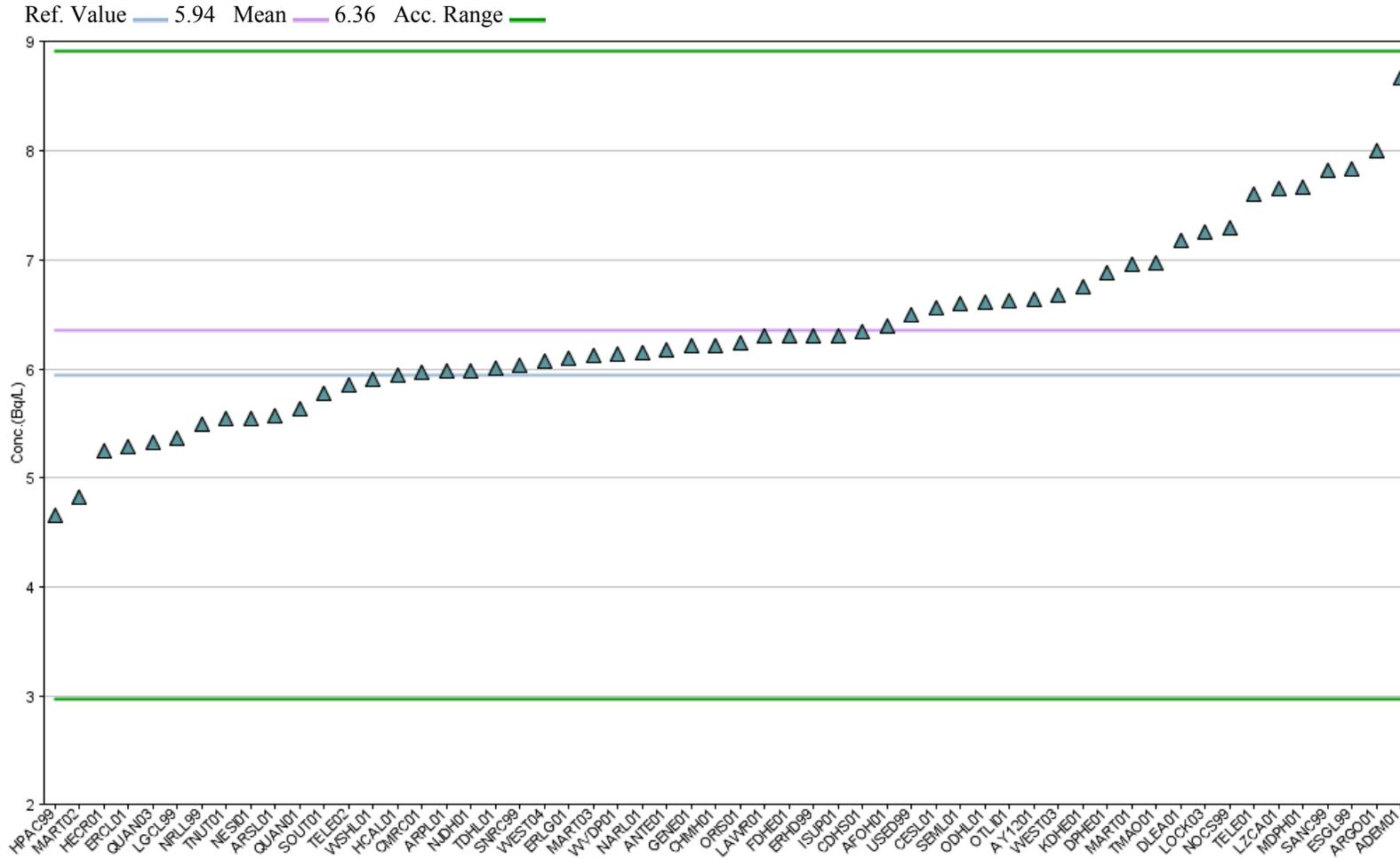
## MAPEP-13-GrW29



Note: This chart shows only data points with values between 0.00 and 1.70 ( $\pm 5$  Standard Deviations)

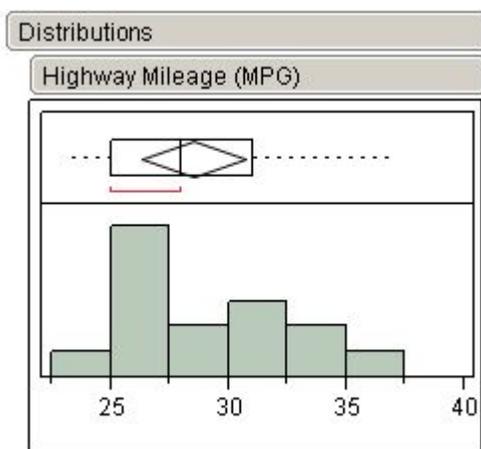
# Gross beta

## MAPEP-13-GrW29

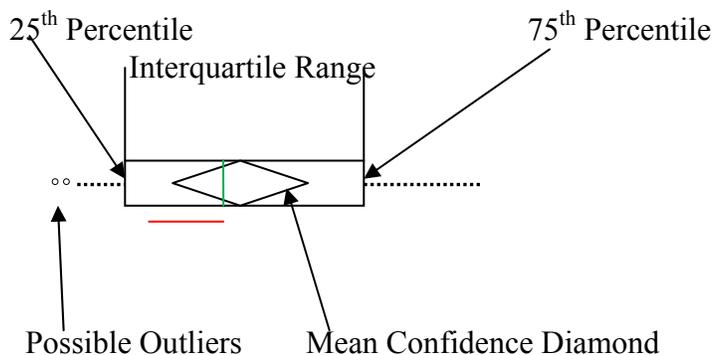


Note: This chart shows only data points with values between 2.31 and 10.41 ( $\pm 5$  Standard Deviations)

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.



Moments	
Mean	28.466667
Std Dev	3.9797104
Std Err Mean	1.0275568
Upper 95% Mean	30.670557
Lower 95% Mean	26.262776
N	15
Sum Wgt	15
Sum	427
Variance	15.838095
Skewness	0.7309964
Kurtosis	-0.165153
CV	13.980247
N Missing	0



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.

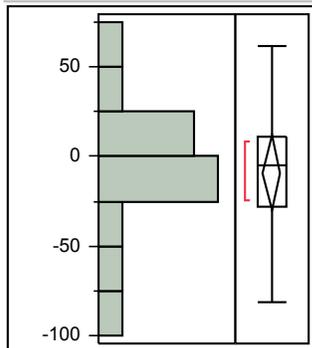
The box plot of the bias data points and the mean visually illustrate the breadth of the distribution and where any potential outliers in the distribution might lie. The moments for the distribution plot are provided below the Bias plot. In some cases, N becomes very small and thus developed statistics may not accurately reflect estimates of the population if N were a significantly larger value.

# GrW Distribution by Detection Method

## GrW Distribution by Detection Method

Distributions Analyte\_Detection=Gross alpha  
Beta Counting - 2 pi gas flow proportional counter

### Bias



### Quantiles

100.0%	maximum	61.2
99.5%		61.2
97.5%		61.2
90.0%		44.1
75.0%	quartile	11.25
50.0%	median	-5.1
25.0%	quartile	-28.4
10.0%		-70.65
2.5%		-81.5
0.5%		-81.5
0.0%	minimum	-81.5

### Summary Statistics

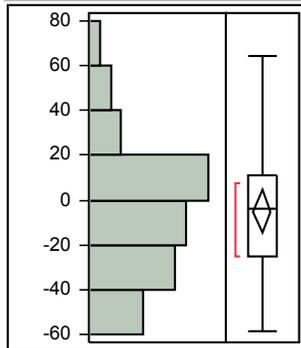
Mean	-9.157143
Std Dev	36.166978
Std Err Mean	9.6660316
Upper 95% Mean	11.725049
Lower 95% Mean	-30.03933
N	14

# GrW Distribution by Detection Method

## GrW Distribution by Detection Method

Distributions Analyte\_Detection=Gross alpha Gross  
Alpha/Beta - 2 pi gas flow proportional counter

### Bias



### Quantiles

100.0%	maximum	64.1
99.5%		64.1
97.5%		64.1
90.0%		36.4
75.0%	quartile	11.3
50.0%	median	-4
25.0%	quartile	-25
10.0%		-44.2
2.5%		-58.6
0.5%		-58.6
0.0%	minimum	-58.6

### Summary Statistics

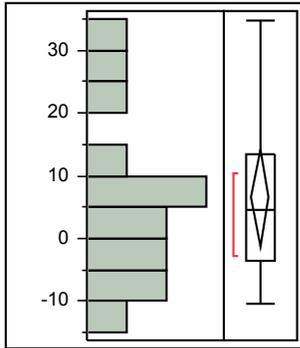
Mean	-5.005128
Std Dev	29.773142
Std Err Mean	4.7675182
Upper 95% Mean	4.6462079
Lower 95% Mean	-14.65646
N	39

# GrW Distribution by Detection Method

## GrW Distribution by Detection Method

Distributions Analyte\_Detection=Gross beta Beta  
Counting - 2 pi gas flow proportional counter

### Bias



### Quantiles

100.0%	maximum	34.7
99.5%		34.7
97.5%		34.7
90.0%		31.4
75.0%	quartile	13.35
50.0%	median	4.5
25.0%	quartile	-3.575
10.0%		-8.45
2.5%		-10.3
0.5%		-10.3
0.0%	minimum	-10.3

### Summary Statistics

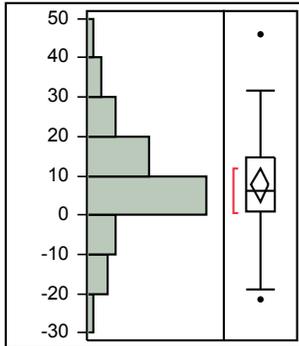
Mean	6.5357143
Std Dev	13.415583
Std Err Mean	3.5854653
Upper 95% Mean	14.281641
Lower 95% Mean	-1.210213
N	14

# GrW Distribution by Detection Method

## GrW Distribution by Detection Method

Distributions Analyte\_Detection=Gross beta Gross  
Alpha/Beta - 2 pi gas flow proportional counter

### Bias



### Quantiles

100.0%	maximum	46
99.5%		46
97.5%		45.29
90.0%		29.04
75.0%	quartile	14.7
50.0%	median	6.1
25.0%	quartile	0.7
10.0%		-10.68
2.5%		-21.365
0.5%		-21.5
0.0%	minimum	-21.5

### Summary Statistics

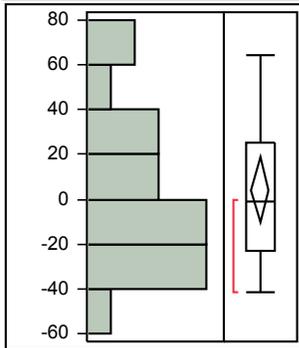
Mean	7.6
Std Dev	13.859888
Std Err Mean	2.1645509
Upper 95% Mean	11.974721
Lower 95% Mean	3.2252795
N	41

# GrW Distribution by Prep Method

## 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	64.1
99.5%		64.1
97.5%		64.1
90.0%		59.55
75.0%	quartile	25.5
50.0%	median	-0.85
25.0%	quartile	-22.875
10.0%		-36.97
2.5%		-41.5
0.5%		-41.5
0.0%	minimum	-41.5

### Summary Statistics

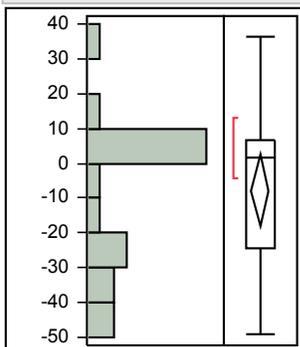
Mean	4.085
Std Dev	31.204407
Std Err Mean	6.9775176
Upper 95% Mean	18.689112
Lower 95% Mean	-10.51911
N	20

# GrW Distribution by Prep Method

## GrW Distribution by Prep Method

Distributions Analyte\_Method=Gross  
alpha Evaporation, acidified

### Bias



### Quantiles

100.0%	maximum	36.4
99.5%		36.4
97.5%		36.4
90.0%		12.59
75.0%	quartile	6.65
50.0%	median	1.4
25.0%	quartile	-24.5
10.0%		-39.81
2.5%		-49.2
0.5%		-49.2
0.0%	minimum	-49.2

### Summary Statistics

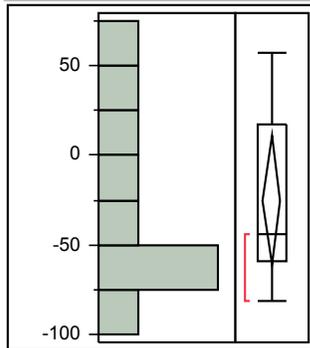
Mean	-7.82
Std Dev	21.945449
Std Err Mean	4.9071516
Upper 95% Mean	2.4507863
Lower 95% Mean	-18.09079
N	20

# GrW Distribution by Prep Method

## GrW Distribution by Prep Method

Distributions Analyte\_Method=Gross  
alpha Evaporation, straight

### Bias



### Quantiles

100.0%	maximum	56.9
99.5%		56.9
97.5%		56.9
90.0%		56.9
75.0%	quartile	17.45
50.0%	median	-44.2
25.0%	quartile	-59.2
10.0%		-81.5
2.5%		-81.5
0.5%		-81.5
0.0%	minimum	-81.5

### Summary Statistics

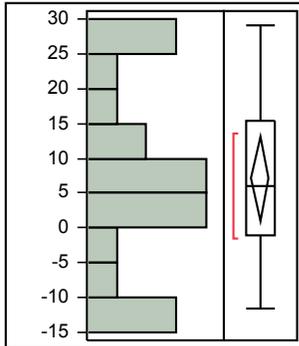
Mean	-25.21111
Std Dev	46.759209
Std Err Mean	15.586403
Upper 95% Mean	10.731199
Lower 95% Mean	-61.15342
N	9

# GrW Distribution by Prep Method

## 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	29.1
99.5%		29.1
97.5%		29.1
90.0%		28.73
75.0%	quartile	15.25
50.0%	median	6.1
25.0%	quartile	-0.95
10.0%		-10.84
2.5%		-11.6
0.5%		-11.6
0.0%	minimum	-11.6

### Summary Statistics

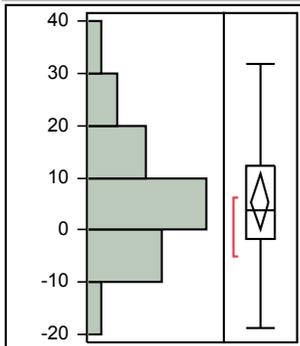
Mean	7.055
Std Dev	12.706255
Std Err Mean	2.841205
Upper 95% Mean	13.00171
Lower 95% Mean	1.1082895
N	20

# GrW Distribution by Prep Method

## GrW Distribution by Prep Method

Distributions Analyte\_Method=Gross  
beta Evaporation, acidified

### Bias



### Quantiles

100.0%	maximum	31.8
99.5%		31.8
97.5%		31.8
90.0%		22.76
75.0%	quartile	12.15
50.0%	median	3.9
25.0%	quartile	-1.65
10.0%		-9.16
2.5%		-18.8
0.5%		-18.8
0.0%	minimum	-18.8

### Summary Statistics

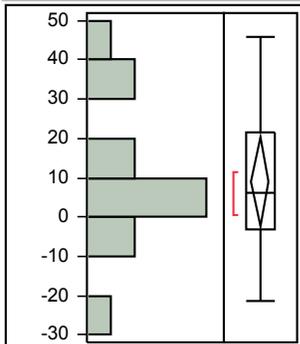
Mean	5.4238095
Std Dev	11.802242
Std Err Mean	2.5754602
Upper 95% Mean	10.796125
Lower 95% Mean	0.0514936
N	21

# GrW Distribution by Prep Method

## GrW Distribution by Prep Method

Distributions Analyte\_Method=Gross  
beta Evaporation, straight

### Bias



### Quantiles

100.0%	maximum	46
99.5%		46
97.5%		46
90.0%		41.48
75.0%	quartile	21.5
50.0%	median	6.1
25.0%	quartile	-3.05
10.0%		-15.94
2.5%		-21.5
0.5%		-21.5
0.0%	minimum	-21.5

### Summary Statistics

Mean	9.1230769
Std Dev	18.66584
Std Err Mean	5.1769726
Upper 95% Mean	20.402731
Lower 95% Mean	-2.156577
N	13