



Drinking Water and Radiation Laboratory Branch

850 Marina Bay Parkway, Richmond, CA 94804
Phone: (510) 620-2911 Fax: (510) 620-2940

FINAL Analysis Results Report for Task ID. 13-0592

Parameter	Method	Result +/- CE	MDA 95	Units
Lab No: 13-0592-01 Sample ID: Second Quarter Time Collected: 5/14/2013 08:20 Sampling Point: Eureka Sample Type: Air Composite				
Beryllium-7	HASL Ga-01-R	0.0441 +/- 0.00150	0.00233	pCi/m3
Potassium-40	HASL Ga-01-R	-0.00102 +/- 0.000564	0.00270	pCi/m3
Niobium-95	HASL Ga-01-R	0.0000585 +/- 0.0000788	0.000371	pCi/m3
Zirconium-95	HASL Ga-01-R	-0.0000720 +/- 0.0000472	0.000280	pCi/m3
Ruthenium-103	HASL Ga-01-R	-0.0000298 +/- 0.0000604	0.000272	pCi/m3
Ruthenium-106	HASL Ga-01-R	-0.000209 +/- 0.000140	0.000614	pCi/m3
Cesium-137	HASL Ga-01-R	-0.0000153 +/- 0.0000138	0.0000612	pCi/m3
Cerium-141	HASL Ga-01-R	0.000320 +/- 0.000187	0.000867	pCi/m3
Cerium-144	HASL Ga-01-R	0.0000224 +/- 0.0000825	0.000366	pCi/m3

- (1) Precision criteria for these method were determined to be acceptable.
- (2) CE is the counting error at the 95% confidence level as defined in Prescribed Procedures for Measurement of Radioactivity in Drinking Water, EPA-600/4-80-032, August 1980.
- (3) MDA95 is the sample specific minimum detectable activity at the 95% confidence level which is the LLD95 divided by 2.22, the efficiency, and the yield, and may include factors for abundance, decay, and ingrowth, dependent on the particular radionuclide. LLD95 is defined in section 7010G, Standard Methods for the Examination of Water and Wastewater, American Water Works Association, 21st Ed., 2005, where Sb is the square root of the instrument background count rate.



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FINAL Analysis Results Report for Task ID. 13-0593

Parameter	Method	Result +/- CE	MDA 95	Units
Lab No: 13-0593-01	Sample ID: Second quarter Sample Type: Air Composite	Time Collected: 5/10/2013 12:55	Sampling Point: Humboldt Bay Power Plant	
Beryllium-7	HASL Ga-01-R	0.0467 +/- 0.00156	0.00266	pCi/m3
Potassium-40	HASL Ga-01-R	0.00111 +/- 0.000591	0.00272	pCi/m3
Niobium-95	HASL Ga-01-R	0.000111 +/- 0.0000865	0.000413	pCi/m3
Zirconium-95	HASL Ga-01-R	-0.0000286 +/- 0.0000768	0.000310	pCi/m3
Ruthenium-103	HASL Ga-01-R	0.00000129 +/- 0.0000633	0.000289	pCi/m3
Ruthenium-106	HASL Ga-01-R	0.0000613 +/- 0.000147	0.000675	pCi/m3
Cesium-137	HASL Ga-01-R	0.00000748 +/- 0.0000141	0.0000660	pCi/m3
Cerium-141	HASL Ga-01-R	0.000205 +/- 0.000217	0.00101	pCi/m3
Cerium-144	HASL Ga-01-R	0.0000354 +/- 0.0000734	0.000325	pCi/m3

- (1) Precision criteria for these method were determined to be acceptable.
- (2) CE is the counting error at the 95% confidence level as defined in Prescribed Procedures for Measurement of Radioactivity in Drinking Water, EPA-600/4-80-032, August 1980.
- (3) MDA95 is the sample specific minimum detectable activity at the 95% confidence level which is the LLD95 divided by 2.22, the efficiency, and the yield, and may include factors for abundance, decay, and ingrowth, dependent on the particular radionuclide. LLD95 is defined in section 7010G, Standard Methods for the Examination of Water and Wastewater, American Water Works Association, 21st Ed., 2005, where Sb is the square root of the instrument background count rate.



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FINAL Analysis Results Report for Task ID. 13-0595

Parameter	Method	Result +/- CE	MDA 95	Units
Lab No: 13-0595-01				
Sample ID: Second quarter Time Collected: 5/14/2013 09:20 Sampling Point: Richmond				
Sample Type: Air Composite				
Beryllium-7	HASL Ga-01-R	0.0616 +/- 0.00197	0.00241	pCi/m3
Potassium-40	HASL Ga-01-R	-0.00374 +/- 0.000601	0.00296	pCi/m3
Niobium-95	HASL Ga-01-R	0.000251 +/- 0.000104	0.000470	pCi/m3
Zirconium-95	HASL Ga-01-R	-0.000191 +/- 0.0000753	0.000260	pCi/m3
Ruthenium-103	HASL Ga-01-R	-0.0000434 +/- 0.0000575	0.000254	pCi/m3
Ruthenium-106	HASL Ga-01-R	-0.000152 +/- 0.000130	0.000573	pCi/m3
Cesium-137	HASL Ga-01-R	0.00000910 +/- 0.0000127	0.0000570	pCi/m3
Cerium-141	HASL Ga-01-R	-0.000187 +/- 0.000111	0.000475	pCi/m3
Cerium-144	HASL Ga-01-R	0.0000128 +/- 0.0000832	0.000368	pCi/m3

- (1) Precision criteria for these method were determined to be acceptable.
- (2) CE is the counting error at the 95% confidence level as defined in Prescribed Procedures for Measurement of Radioactivity in Drinking Water, EPA-600/4-80-032, August 1980.
- (3) MDA95 is the sample specific minimum detectable activity at the 95% confidence level which is the LLD95 divided by 2.22, the efficiency, and the yield, and may include factors for abundance, decay, and ingrowth, dependent on the particular radionuclide. LLD95 is defined in section 7010G, Standard Methods for the Examination of Water and Wastewater, American Water Works Association, 21st Ed., 2005, where Sb is the square root of the instrument background count rate.



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FINAL Analysis Results Report for Task ID. 13-0594

Parameter	Method	Result +/- CE	MDA 95	Units
Lab No: 13-0594-01 Sample ID: Second quarter Time Collected: 5/14/2013 10:05 Sampling Point: Livermore Sample Type: Air Composite				
Beryllium-7	HASL Ga-01-R	0.108 +/- 0.00294	0.00238	pCi/m3
Potassium-40	HASL Ga-01-R	0.000797 +/- 0.000488	0.00226	pCi/m3
Niobium-95	HASL Ga-01-R	0.0000557 +/- 0.0000715	0.000338	pCi/m3
Zirconium-95	HASL Ga-01-R	-0.0000978 +/- 0.0000667	0.000254	pCi/m3
Ruthenium-103	HASL Ga-01-R	0.00000349 +/- 0.0000484	0.000220	pCi/m3
Ruthenium-106	HASL Ga-01-R	0.000144 +/- 0.000123	0.000581	pCi/m3
Cesium-137	HASL Ga-01-R	0.00000986 +/- 0.0000126	0.0000572	pCi/m3
Cerium-141	HASL Ga-01-R	0.000130 +/- 0.000117	0.000546	pCi/m3
Cerium-144	HASL Ga-01-R	0.0000110 +/- 0.0000719	0.000325	pCi/m3

- (1) Precision criteria for these method were determined to be acceptable.
- (2) CE is the counting error at the 95% confidence level as defined in Prescribed Procedures for Measurement of Radioactivity in Drinking Water, EPA-600/4-80-032, August 1980.
- (3) MDA95 is the sample specific minimum detectable activity at the 95% confidence level which is the LLD95 divided by 2.22, the efficiency, and the yield, and may include factors for abundance, decay, and ingrowth, dependent on the particular radionuclide. LLD95 is defined in section 7010G, Standard Methods for the Examination of Water and Wastewater, American Water Works Association, 21st Ed., 2005, where Sb is the square root of the instrument background count rate.



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FINAL Analysis Results Report for Task ID. 13-0597

Parameter	Method	Result +/- CE	MDA 95	Units
Lab No: 13-0597-01				
Sample ID: Second quarter Time Collected: 5/10/2013 14:30 Sampling Point: San Luis Obispo				
Sample Type: Air Composite				
Beryllium-7	HASL Ga-01-R	0.0621 +/- 0.00204	0.00275	pCi/m3
Potassium-40	HASL Ga-01-R	-0.00222 +/- 0.000671	0.00324	pCi/m3
Niobium-95	HASL Ga-01-R	0.000111 +/- 0.0000967	0.000455	pCi/m3
Zirconium-95	HASL Ga-01-R	-0.000146 +/- 0.0000854	0.000286	pCi/m3
Ruthenium-103	HASL Ga-01-R	0.0000329 +/- 0.0000715	0.000328	pCi/m3
Ruthenium-106	HASL Ga-01-R	-0.0000639 +/- 0.000146	0.000660	pCi/m3
Cesium-137	HASL Ga-01-R	-0.0000107 +/- 0.0000145	0.0000649	pCi/m3
Cerium-141	HASL Ga-01-R	0.000128 +/- 0.000214	0.00100	pCi/m3
Cerium-144	HASL Ga-01-R	-0.0000884 +/- 0.0000919	0.000397	pCi/m3

- (1) Precision criteria for these method were determined to be acceptable.
- (2) CE is the counting error at the 95% confidence level as defined in Prescribed Procedures for Measurement of Radioactivity in Drinking Water, EPA-600/4-80-032, August 1980.
- (3) MDA95 is the sample specific minimum detectable activity at the 95% confidence level which is the LLD95 divided by 2.22, the efficiency, and the yield, and may include factors for abundance, decay, and ingrowth, dependent on the particular radionuclide. LLD95 is defined in section 7010G, Standard Methods for the Examination of Water and Wastewater, American Water Works Association, 21st Ed., 2005, where Sb is the square root of the instrument background count rate.



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FINAL Analysis Results Report for Task ID. 13-0591

Parameter	Method	Result +/- CE	MDA 95	Units
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Lab No: 13-0591-01	Sample ID: Second Qtr air f	Time Collected: 5/10/2013 12:00	Sampling Point: Diablo Canyon	
	Sample Type: Air Composite			
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Beryllium-7	HASL Ga-01-R	0.0690 +/- 0.00205	0.00269	pCi/m3
Potassium-40	HASL Ga-01-R	0.00144 +/- 0.000587	0.00269	pCi/m3
Niobium-95	HASL Ga-01-R	0.0000399 +/- 0.0000814	0.000377	pCi/m3
Zirconium-95	HASL Ga-01-R	-0.0000720 +/- 0.0000387	0.000276	pCi/m3
Ruthenium-103	HASL Ga-01-R	-0.0000233 +/- 0.0000559	0.000244	pCi/m3
Ruthenium-106	HASL Ga-01-R	0.000161 +/- 0.000140	0.000656	pCi/m3
Cesium-137	HASL Ga-01-R	0.0000247 +/- 0.0000141	0.0000673	pCi/m3
Cerium-141	HASL Ga-01-R	0.000101 +/- 0.000195	0.000909	pCi/m3
Cerium-144	HASL Ga-01-R	-0.0000773 +/- 0.0000851	0.000368	pCi/m3

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- (1) Precision criteria for these method were determined to be acceptable.
 - (2) CE is the counting error at the 95% confidence level as defined in Prescribed Procedures for Measurement of Radioactivity in Drinking Water, EPA-600/4-80-032, August 1980.
 - (3) MDA95 is the sample specific minimum detectable activity at the 95% confidence level which is the LLD95 divided by 2.22, the efficiency, and the yield, and may include factors for abundance, decay, and ingrowth, dependent on the particular radionuclide. LLD95 is defined in section 7010G, Standard Methods for the Examination of Water and Wastewater, American Water Works Association, 21st Ed., 2005, where Sb is the square root of the instrument background count rate.



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FINAL Analysis Results Report for Task ID. 13-0598

Parameter	Method	Result +/- CE	MDA 95	Units
Lab No: 13-0598-01 Sample ID: Second quarter Time Collected: 5/22/2013 16:00 Sampling Point: San Onofre Sample Type: Air Composite				
Beryllium-7	HASL Ga-01-R	0.0710 +/- 0.00202	0.00215	pCi/m3
Potassium-40	HASL Ga-01-R	0.000997 +/- 0.000478	0.00220	pCi/m3
Niobium-95	HASL Ga-01-R	-0.0000473 +/- 0.0000621	0.000282	pCi/m3
Zirconium-95	HASL Ga-01-R	-0.0000383 +/- 0.0000680	0.000223	pCi/m3
Ruthenium-103	HASL Ga-01-R	-0.0000799 +/- 0.0000444	0.000193	pCi/m3
Ruthenium-106	HASL Ga-01-R	0.000164 +/- 0.000128	0.000603	pCi/m3
Cesium-137	HASL Ga-01-R	0.0000137 +/- 0.0000130	0.0000616	pCi/m3
Cerium-141	HASL Ga-01-R	-0.0000303 +/- 0.0000842	0.000377	pCi/m3
Cerium-144	HASL Ga-01-R	-0.0000906 +/- 0.0000716	0.000316	pCi/m3

- (1) Precision criteria for these method were determined to be acceptable.
- (2) CE is the counting error at the 95% confidence level as defined in Prescribed Procedures for Measurement of Radioactivity in Drinking Water, EPA-600/4-80-032, August 1980.
- (3) MDA95 is the sample specific minimum detectable activity at the 95% confidence level which is the LLD95 divided by 2.22, the efficiency, and the yield, and may include factors for abundance, decay, and ingrowth, dependent on the particular radio-nuclide. LLD95 is defined in section 7010G, Standard Methods for the Examination of Water and Wastewater, American Water Works Association, 21st Ed., 2005, where Sb is the square root of the instrument background count rate.



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FINAL Analysis Results Report for Task ID. 13-0596

Parameter	Method	Result +/- CE	MDA 95	Units
Lab No: 13-0596-01 Sample ID: Second quarter Time Collected: 5/17/2013 14:13 Sampling Point: San Diego Sample Type: Air Composite				
Beryllium-7	HASL Ga-01-R	0.0857 +/- 0.00247	0.00278	pCi/m3
Potassium-40	HASL Ga-01-R	0.000535 +/- 0.000641	0.00299	pCi/m3
Niobium-95	HASL Ga-01-R	0.0000118 +/- 0.0000889	0.000407	pCi/m3
Zirconium-95	HASL Ga-01-R	-0.000107 +/- 0.0000825	0.000287	pCi/m3
Ruthenium-103	HASL Ga-01-R	-0.0000315 +/- 0.0000553	0.000244	pCi/m3
Ruthenium-106	HASL Ga-01-R	0.0000409 +/- 0.000153	0.000705	pCi/m3
Cesium-137	HASL Ga-01-R	0.0000197 +/- 0.0000147	0.0000698	pCi/m3
Cerium-141	HASL Ga-01-R	0.0000237 +/- 0.000118	0.000520	pCi/m3
Cerium-144	HASL Ga-01-R	0.0000873 +/- 0.0000918	0.000409	pCi/m3

- (1) Precision criteria for these method were determined to be acceptable.
- (2) CE is the counting error at the 95% confidence level as defined in Prescribed Procedures for Measurement of Radioactivity in Drinking Water, EPA-600/4-80-032, August 1980.
- (3) MDA95 is the sample specific minimum detectable activity at the 95% confidence level which is the LLD95 divided by 2.22, the efficiency, and the yield, and may include factors for abundance, decay, and ingrowth, dependent on the particular radionuclide. LLD95 is defined in section 7010G, Standard Methods for the Examination of Water and Wastewater, American Water Works Association, 21st Ed., 2005, where Sb is the square root of the instrument background count rate.