



**Drinking Water and Radiation Laboratory Branch**

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

**Q4**

**FINAL Analysis Results Report for Task ID. 15-0103**

Parameter	Method	Result +/- CE	MDA 95	Units
<b>Lab No: 15-0103-01</b>				
Sample ID: 4th Qtr 2014 Time Collected: 11/18/2014 16:45 Sampling Point: Eureka				
Sample Type: Air Composite				
Beryllium-7	HASL Ga-01-R	0.0544 +/- 0.00515	0.00318	pCi/m3
Potassium-40	HASL Ga-01-R	0.000230 +/- 0.00116	0.00273	pCi/m3
Niobium-95	HASL Ga-01-R	0.000267 +/- 0.000267	0.000607	pCi/m3
Zirconium-95	HASL Ga-01-R	-0.000218 +/- 0.000222	0.000364	pCi/m3
Ruthenium-103	HASL Ga-01-R	0.0000907 +/- 0.000155	0.000368	pCi/m3
Ruthenium-106	HASL Ga-01-R	-0.0000631 +/- 0.000345	0.000779	pCi/m3
Cesium-137	HASL Ga-01-R	0.00000686 +/- 0.0000344	0.0000803	pCi/m3
Cerium-141	HASL Ga-01-R	-0.0000386 +/- 0.000685	0.00161	pCi/m3
Cerium-144	HASL Ga-01-R	0.0000115 +/- 0.000218	0.000485	pCi/m3

- Precision criteria for these method were determined to be acceptable.
- 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.
- 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. 15-0105**

Parameter	Method	Result +/- CE	MDA 95	Units
<b>Lab No: 15-0105-01</b>				
Sample ID: 4th Qtr 2014 Time Collected: 11/18/2014 10:50 Sampling Point: Richmond				
Sample Type: Air Composite				
Beryllium-7	HASL Ga-01-R	0.0694 +/- 0.00645	0.00361	pCi/m3
Potassium-40	HASL Ga-01-R	-0.000120 +/- 0.00126	0.00299	pCi/m3
Niobium-95	HASL Ga-01-R	0.000292 +/- 0.000269	0.000659	pCi/m3
Zirconium-95	HASL Ga-01-R	-0.000182 +/- 0.000214	0.000383	pCi/m3
Ruthenium-103	HASL Ga-01-R	0.0000543 +/- 0.000182	0.000422	pCi/m3
Ruthenium-106	HASL Ga-01-R	0.0000531 +/- 0.000393	0.000907	pCi/m3
Cesium-137	HASL Ga-01-R	0.0000323 +/- 0.0000390	0.0000934	pCi/m3
Cerium-141	HASL Ga-01-R	-0.000120 +/- 0.000765	0.00179	pCi/m3
Cerium-144	HASL Ga-01-R	-0.0000444 +/- 0.000232	0.000510	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. 15-0104

Parameter	Method	Result +/- CE	MDA 95	Units
<b>Lab No: 15-0104-01</b>				
Sample ID: 4th Qtr 2014 Time Collected: 11/12/2014 13:50 Sampling Point: Livermore				
Sample Type: Air Composite				
Beryllium-7	HASL Ga-01-R	0.0822 +/- 0.00618	0.00219	pCi/m3
Potassium-40	HASL Ga-01-R	0.00191 +/- 0.000791	0.00175	pCi/m3
Niobium-95	HASL Ga-01-R	0.0000195 +/- 0.000134	0.000311	pCi/m3
Zirconium-95	HASL Ga-01-R	-0.000145 +/- 0.000127	0.000213	pCi/m3
Ruthenium-103	HASL Ga-01-R	-0.0000285 +/- 0.0000937	0.000210	pCi/m3
Ruthenium-106	HASL Ga-01-R	-0.0000354 +/- 0.000200	0.000452	pCi/m3
Cesium-137	HASL Ga-01-R	0.00000195 +/- 0.0000190	0.0000438	pCi/m3
Cerium-141	HASL Ga-01-R	0.000338 +/- 0.000200	0.000469	pCi/m3
Cerium-144	HASL Ga-01-R	0.0000637 +/- 0.000120	0.000274	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. 15-0107**

Parameter	Method	Result +/- CE	MDA 95	Units
<b>Lab No: 15-0107-01</b>				
Sample ID: 4th Qtr 2014 Time Collected: 11/14/2014 16:15 Sampling Point: San Luis Obispo				
Sample Type: Air Composite				
Beryllium-7	HASL Ga-01-R	0.0960 +/- 0.00738	0.00285	pCi/m3
Potassium-40	HASL Ga-01-R	0.00286 +/- 0.00130	0.00291	pCi/m3
Niobium-95	HASL Ga-01-R	-0.000109 +/- 0.000191	0.000424	pCi/m3
Zirconium-95	HASL Ga-01-R	-0.000115 +/- 0.000174	0.000317	pCi/m3
Ruthenium-103	HASL Ga-01-R	0.0000354 +/- 0.000144	0.000332	pCi/m3
Ruthenium-106	HASL Ga-01-R	0.0000909 +/- 0.000300	0.000692	pCi/m3
Cesium-137	HASL Ga-01-R	-0.0000145 +/- 0.0000305	0.0000676	pCi/m3
Cerium-141	HASL Ga-01-R	0.00000243 +/- 0.000306	0.000672	pCi/m3
Cerium-144	HASL Ga-01-R	0.000132 +/- 0.000190	0.000424	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. 15-0102**

Parameter	Method	Result +/- CE	MDA 95	Units
<b>Lab No: 15-0102-01</b>				
Sample ID: 4th Qtr 2014		Time Collected: 11/4/2014	11:00	Sampling Point: Diablo Canyon
Sample Type: Air Composite				
Beryllium-7	HASL Ga-01-R	0.0759 +/- 0.00696	0.00363	pCi/m3
Potassium-40	HASL Ga-01-R	0.000578 +/- 0.00124	0.00290	pCi/m3
Niobium-95	HASL Ga-01-R	0.000262 +/- 0.000254	0.000623	pCi/m3
Zirconium-95	HASL Ga-01-R	-0.000214 +/- 0.000216	0.000391	pCi/m3
Ruthenium-103	HASL Ga-01-R	-0.0000676 +/- 0.000183	0.000411	pCi/m3
Ruthenium-106	HASL Ga-01-R	0.000306 +/- 0.000352	0.000854	pCi/m3
Cesium-137	HASL Ga-01-R	0.0000158 +/- 0.0000361	0.0000851	pCi/m3
Cerium-141	HASL Ga-01-R	0.000213 +/- 0.000842	0.00197	pCi/m3
Cerium-144	HASL Ga-01-R	-0.0000296 +/- 0.000240	0.000529	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. 15-0108**

Parameter	Method	Result +/- CE	MDA 95	Units
<b>Lab No: 15-0108-01</b>				
Sample ID: 4th Qtr 2014 Time Collected: 11/13/2014 16:00 Sampling Point: San Onofre				
Sample Type: Air Composite				
Beryllium-7	HASL Ga-01-R	0.100 +/- 0.00741	0.00255	pCi/m3
Potassium-40	HASL Ga-01-R	0.0000791 +/- 0.00100	0.00235	pCi/m3
Niobium-95	HASL Ga-01-R	0.0000281 +/- 0.000174	0.000402	pCi/m3
Zirconium-95	HASL Ga-01-R	-0.000162 +/- 0.000144	0.000268	pCi/m3
Ruthenium-103	HASL Ga-01-R	0.00000263 +/- 0.000131	0.000298	pCi/m3
Ruthenium-106	HASL Ga-01-R	-0.0000884 +/- 0.000236	0.000529	pCi/m3
Cesium-137	HASL Ga-01-R	0.00000325 +/- 0.0000234	0.0000526	pCi/m3
Cerium-141	HASL Ga-01-R	0.000144 +/- 0.000262	0.000586	pCi/m3
Cerium-144	HASL Ga-01-R	0.0000180 +/- 0.000145	0.000318	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. 15-0106**

Parameter	Method	Result +/- CE	MDA 95	Units
<b>Lab No: 15-0106-01</b>				
Sample ID: 4th Qtr 2014 Time Collected: 11/13/2014 14:09 Sampling Point: San Diego				
Sample Type: Air Composite				
Beryllium-7	HASL Ga-01-R	0.121 +/- 0.00721	0.00269	pCi/m3
Potassium-40	HASL Ga-01-R	0.00260 +/- 0.00114	0.00255	pCi/m3
Niobium-95	HASL Ga-01-R	-0.0000376 +/- 0.000205	0.000465	pCi/m3
Zirconium-95	HASL Ga-01-R	-0.0000346 +/- 0.000174	0.000310	pCi/m3
Ruthenium-103	HASL Ga-01-R	-0.0000465 +/- 0.000147	0.000329	pCi/m3
Ruthenium-106	HASL Ga-01-R	0.00000135 +/- 0.000275	0.000628	pCi/m3
Cesium-137	HASL Ga-01-R	0.00000705 +/- 0.0000279	0.0000626	pCi/m3
Cerium-141	HASL Ga-01-R	0.000789 +/- 0.000471	0.00107	pCi/m3
Cerium-144	HASL Ga-01-R	-0.0000605 +/- 0.000187	0.000406	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.